Arbor Day and Bird Day Issue, March 1944

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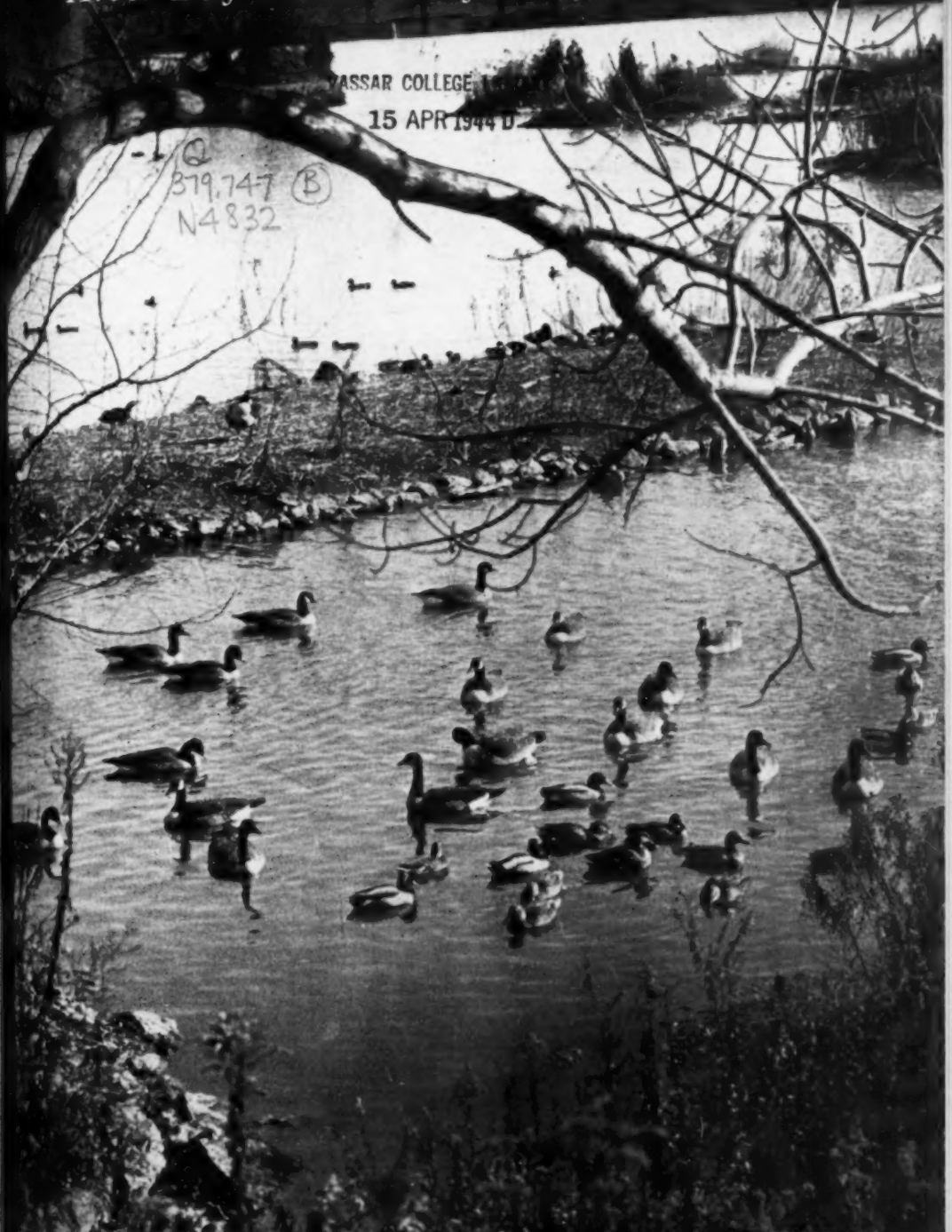

BULLETIN TO THE SCHOOLS

VOLUME 30
NUMBER 7

THE UNIVERSITY OF
THE STATE OF NEW YORK

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COVER PICTURE:

Canada Geese at State Game Farm, Delmar. Photograph by Bessie Wood.

THE UNIVERSITY OF THE STATE OF NEW YORK
BULLETIN TO THE SCHOOLS

Issued monthly during the school year by the State Education Department

CHARLES F. PROBES, *Editor*

This bulletin is sent without charge to all schools and educational institutions of the State. To others it will be mailed postpaid for 50 cents a year, 10 cents for single copies.

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The University of the State of New York

Bulletin to the Schools

VOLUME 30 MARCH 1944 NUMBER 7

Arbor Day and Bird Day

To MILLIONS of men the world over, the spring of 1944 is a time of menace and unequaled challenge. All the springs to come will be tempered by their devotion and heroism. It will be good for them, and for us, if we can keep within our hearts a love of nature.

From the *Collected Poems of Robert Frost* (Henry Holt and Company), I have chosen, with the kind permission of the publishers,

A PRAYER IN SPRING

Oh, give us pleasure in the flowers to-day;
And give us not to think so far away
As the uncertain harvest; keep us here
All simply in the springing of the year.

Oh, give us pleasure in the orchard white,
Like nothing else by day, like ghosts by night;
And make us happy in the happy bees,
The swarm dilating round the perfect trees.

And make us happy in the darting bird
That suddenly above the bees is heard,
The meteor that thrusts in with needle bill,
And off a blossom in mid air stands still.

For this is love and nothing else is love,
The which it is reserved for God above
To sanctify to what far ends He will,
But which it only needs that we fulfil.

I have the honor to designate April 14th as Bird Day and April 28th, May 5th or May 12th as Arbor Day in accordance with the convenience of the locality.

George D. Stoddard

Commissioner of Education

Trees and Birds

RAYMOND TIFFT FULLER[1]
Winterton

: : : : : :

" Timber, birds, income, beauty, fascination, hobbies " — these we plant when we plant a tree

WE OLDSTERS of country-school origins all remember that old poem, the one so many of us had to speak on Arbor Days: " What does he plant who plants a tree? " . . . — shaft of beauty . . . cool shade . . . the friend of sun and sky . . . forest's heritage . . . harvest of a coming age . . . blessings on the neighborhood . . . flag of breezes free . . . " A nation's growth from sea to sea stirs in his heart who plants a tree."

Yes, poet Brunner seventy years ago had it all in; the planting of forest trees — which in his day *had not begun* — is truly an act of astonishing importance to everyone in America!

Yet, may I point out, in addition to these blessings of which he sings, there is another: that planting job, *your* job, may be in its way equivalent to taking out a life insurance policy; it may be a means whereby you repay the expense of a college education. This have I learned from experience.

For I started a small plantation in 1925; today, 19 years later, it is a young forest. Has it paid? Paid, I mean, financially? It has. Were it a larger acreage it would have paid more. Of course, besides, it has paid me in beauty, in birds, in what my grandchildren will know as Big Timber.

Into my hands came three fields totaling some 14 acres of southern New York State " old meadow," the kind just beginning to grow into one of those goldenrody, sumachy, briery, grapeviney tangles, testimony to farmer-man's defeat, his acceptance of Nature's two-century process of treatment-and-cure. (Are there pieces of such sick land out your way? I'm sure there are.) . . . Well, my planting, done according to the State Conservation Department's directions, required a week in two successive Aprils — Norway spruce, red pine, Scotch pine, six-feet-each-way. Such tiny rooted twigs ever to grow into forest trees!

At nine years I began to sell young Christmas trees — *this I had not foreseen!* At retail — Come, cash, carry — to a city nine miles away — each Yuletide since. Investment, taxes, upkeep, all covered many times over by now. And only *thinned out*; all the *future forest remains!* . . . Ask the Conservation Department about this thing called forestation!

Brunner's good old poem held these lines too, remember?

> He plants a home to Heaven anigh
> For song and mother-croon of bird.

There has been much of *that* in my reforestation project. The meadow's original surface has transformed into a brown and ruglike floor of pine and spruce needles out of which nothing grows but the trees. The old meadow supported a few nesting sparrows, song, field, grasshopper, an occasional vesper; and a towhee and thrasher pair or two; a meadowlark family, and once a bobolink's, ground-birds all. While the young trees

[1]Author of *Now That We Have To Walk*, Dutton, 1943.

began to reach a height of three feet and were not yet crowding, all the above species began to increase slightly. They disappeared entirely three years later in the plantation proper, though not beyond its edges. A pheasant hen or two nested annually; and a mother ruffed grouse. Chipping sparrows appeared. As the stand reached seven feet catbirds came to live; more chippies, a kingbird family or two, many towhees. Robin dwellers grew more numerous each season. My bird-banding station flourished. I had some tenants returning year after year, as their bands proved. By now, the pheasant clan did not like the cover for nesting, but came there to stay through winters.

Today, when heights range up to 28 feet, here is as accurate a (1943) breeding-bird list as I can compile:

Courtesy New York State Conservation Department

Red Pines at Winterton Are Resistant to Disease and Insect Attacks. The Trees in This Picture Are About 13 Years Old.

	(Pairs)		(Pairs)
Wood thrush	2	Song sparrow	1
Veery	1	Thrasher	2
Mourning dove	5	Towhee	2
Cuckoos (both species)	5	Waxwing (cedar)	3
Robin	20	Green heron	1
Catbird	4	Chickadee	2
Blue jay	3	Red-wing	1
House wren	2	Yellow-throat	1
Chipping sparrow	3	Field sparrow	1
Bluebird	1	Downy woodpecker	1

These figures cover a plot of six acres, the planting right alongside our one-room rural school grounds. (Birdhouses account for some of the above residents.) Here are easily *six times* as many birds as the meadow harbored in any June.

It won't be long now; I look forward to the first crow nest and hawk nest! Last fall a barred owl (which annually nests half a mile distant) took up temporary quarters in a hillock group of these pines not 200 feet from the school desks! It remained there so long that the forest floor for many square rods was strewn with its ejected pellets — virtually every one of some hundred of which a pupil and I examined. They showed a *straight mouse diet*. Oddly enough, each pellet seemed to hold the complete bones and fur of *two* mice. Three species, the white-footed, meadow and house mouse, only seem to have been represented in the food of that big owl for weeks. Often bands of crows had piled in to pester him; children played ball a few rods away; people occasionally walked through the area; yet the owl knew a good hunting ground when he *heard* it, and stayed on.

As casuals or accidentals, I see now and then in the green young woods evening and pine grosbeaks, pine siskins, purple finches, red crossbills, woodcock, Cooper's and sharp-shinned hawks; red-breasted nuthatches; and golden-crowned kinglets from the north winter here regularly. During robin migrations, spring and fall, the place affords sleeping quarters for thousands each night; it is a great hangout and refitting station for tarrying white-throats and white-crowned sparrows. Through the colder six months of the year nervous, jittery flocks of slate-colored juncos stay there. Huge fleets of moving warblers go north and south through this particular plantation plot, and can be watched to particular advantage among the evergreen foliage, where their colors show up sharply. The bird-banding traps of my federal fish and wildlife service station, situated around the margins, have taken 40 species and 1500 individuals in the past three years.

Timber, birds, income, beauty, fascination, hobbies — you simply *don't know* all you'll plant if you plant a forest! — And take proper care of it!

Young People and Trees

JAMES D. POND

Assistant Extension Forester, Cornell University

: : : : : :

A man's faith in boys results in the planting of 18,000,000 trees

"I WILL SEE that any 4-H Club member in the State of New York receives from our Conservation Department nursery 1000 free trees to start a forest." It was Clifford R. Pettis, superintendent of lands and forests in the State Conservation Department, who made that significant statement in 1928 and thus vitalized into action and results the slogan, "Youth and Trees Grow Up Together."

Already known as the Father of Reforestation in New York for his pioneering work in tree planting on the burned areas of state lands in the Adirondacks and for his encouragement to private planting, Mr Pettis added further lustre to his title

by this generous and far-sighted gesture to the farm youth of the State.

It was a 4-H boy from Orange county who really prompted Mr Pettis to make his offer of free trees. Milton Bookstaver of Collabar had bought out of his own hard-earned money several thousands of trees to plant on his father's farm. In recognition of this achievement, the county club agent of Orange county arranged to take Milton with him in the fall of 1928 on the annual three-day tour of the Adirondacks, on which occasion Mr Pettis was host to foresters, public officials and forest-minded landowners. Milton's eager interest in tree planting, his intelligent questions, his own record of accomplishment stirred Mr Pettis' ever-ready enthusiasm. He decided then and there to add farm youth to the growing list of tree planters.

Today in every county of the State there are thousands of 4-H plantations, living, growing monuments to the man who nurtured an ideal held by a growing boy.

By the end of April 1944, there will be almost 18,000,000 trees planted by 4-H foresters in this State. Each club member receives a thousand free trees to start his own plantation of one acre. No records have been kept of the number of trees purchased and planted by club members to add to their original plantation, but a conservative estimate would be about two million trees. In addition, the stimulus given to the reforestation of otherwise unproductive acres by private land owners would be difficult to estimate.

The 4-H forestry program initiated by Mr Pettis and sportsmen's groups has gathered momentum from year to year, with the full cooperation of the Conservation Department. Besides planting a million trees a year, club members wanted to learn more about trees. A second project called " Forest Appreciation " was started to help them to identify the common trees in their woodlands and to realize their values and uses. Then other projects were added in woodlot improvement, in log scaling and timber estimating, in growing and planting hardwood seedlings, and others are in prospect in plantation culture and marketing wood products.

From the start, fish and game clubs and other outdoor groups recognized the values inherent in this tree-planting program and provided prizes and awards. Other organizations, including the Granges and service clubs, backed the movement, while in western New York for 11 years the Buffalo Evening News has sponsored 4-H forestry projects in nine counties. The late Floyd L. Carlisle paid expenses on the tour of outstanding young tree planters from northern New York counties.

One of the most sought-for awards is a trip on the September Adirondack Forestry Tour, to follow in young Bookstaver's footsteps. For several years the junior foresters joined with interested adults in a four-day tour of nurseries, plantations and the wonders of the Adirondacks. In 1933, when the adult tour was canceled, the 4-H Club members with their club agents made up their own group. Now the 4-H Forestry Tour, 100 to 140 strong, has its own routes, camping site at Lake Clear and well-developed program to which forestry club members look forward eagerly for three full days of enjoyment and education.

On this tour, after a climb to the summit of Mount St Regis and its sweeping view of limpid blue lakes and verdant mountain slopes splashed with autumn color, and a swift return to lower levels, club members pause for a few moments at the ivy-covered brick Church-in-the-Woods at Paul Smith's to lay a wreath and bow their heads at the grave of Clifford Pettis.

Boys are not alone in their appreciation of the out-of-doors, and of the needs for reforestation. Each year from 250 to

300 girls get their bundles of little trees, seek the help of their fathers or brothers and set out their acres of small seedlings or transplants. Year after year these young folk watch with eager anticipation as the trees lift their branches skyward. And great is their pride as the side limbs close in and the compact mass of young forest develops.

In 1933, pupils in vocational agriculture become participants in the reforestation program, under the direction of the instructors in high school departments of agriculture. Every year almost half a million trees have been set by sturdy Future Farmers, with a total at the end of this spring reaching almost 5,000,000 trees. About 100 schools participate each year.

Some of the individual accomplishments are worthy of recognition. Young Bookstaver, whose deep interest helped start this project, has planted 6000 trees, and is well known in his community for the success his fox hounds have made in field trials. His original planting of Scotch pine in 1926 has grown well and the trees are now 20 feet tall, and one of his delights is to stride among the tall, slender trunks of his future forest.

Planting the Trees in 1929

In Chenango county, Lyle Randall of Brisben bought an abandoned farm with his own money, after he saw how his first planting in 1931 of white pine and Norway spruce grew near his home. On the old fields covered with wild grass and brush, Randall and his father have set out 55,000 trees in the past 12 years. Before long he will be harvesting a crop of fence posts from the larch he interplanted with his red and white pines, and some of his spruce are large enough now to cut for Christmas trees.

In Chemung county, a 4-H Club boy in 1941 sold enough Christmas trees from his 9-year old plantation to pay the taxes on the family farm.

An outstanding example of large returns from a plantation is shown by a 4-H forester from Erie county. From trees set in 1932, Gene Hanson of Hamburg started harvesting Norway spruce and Scotch pine in 1937 to sell for Christmas trees in and around his home town. By the end of 1941 he had sold all but a dozen trees reserved near his cabin, had replanted the area with other trees and had cleared more than $500. Not many cultivated crops will bring a net return of $50 an acre a year.

With large demands on our forest resources, with cutting of timber exceeding the annual growth, the need for reforestation and for wise handling of our woodlands is evident. Club members and future farmers can justly take pride in the results of their tree planting efforts. Each passing year enhances the contribution their small plantations have made in beautifying the landscape of the Empire State, in stabilizing the priceless top soil, in enriching worn-out fields, in storing supplies of moisture, in preventing the silting of stream, and finally, and not least in importance, in the treasurehouse of timber resources to help build and reconstruct for the peace for which this Nation and its allies are fighting.

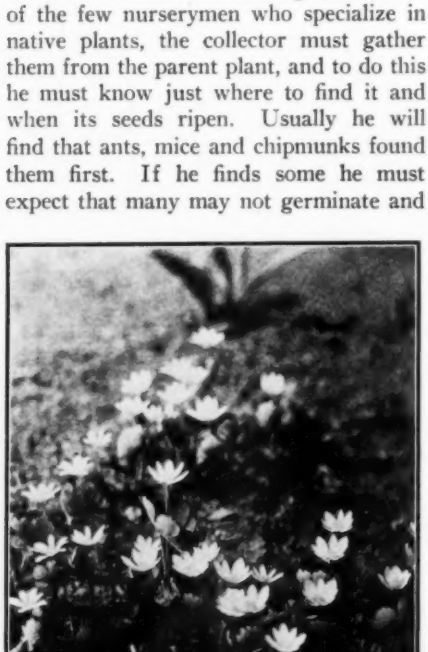
The Same Plantation in 1940

Establishing Plants in Wild Flower Sanctuaries

FREDERICK HOUGHTON M.S.

It's not easy, but with proper methods and equipment, wild plants can be transplanted successfully. An expert tells how to do it.

PLANTS THAT are not already in a wild flower sanctuary must be either collected elsewhere or propagated from seeds. Of these two methods, propagating them from seeds is the more difficult. Unless the seeds can be bought from one of the few nurserymen who specialize in native plants, the collector must gather them from the parent plant, and to do this he must know just where to find it and when its seeds ripen. Usually he will find that ants, mice and chipmunks found them first. If he finds some he must expect that many may not germinate and that the seedlings are difficult to raise. A few plants, however, can be secured most easily from seeds, Adlumia, Cassia, Frasera and American Campanula being the easiest.



"Green against the draggled drift,
Faint and frail and first."

Bloodroot in a Neutral Border

Grown plants, dug and replanted properly are more apt to succeed, but even when they are gathered by experienced plant lovers, many will die. Proper methods of gathering and transporting them will minimize this loss.

Before digging a plant the collector should know the nature of its root system, whether it has a cluster of fibrous matted roots or a deeply set taproot, whether it has widely ramifying roots or rootstocks, or whether it grows from tubers, bulbs or underground stems.

A plant that rises from a cluster of fibrous roots, such as the Hepatica, or that grows from tubers or bulbs, like Trilliums or Mertensia, can be dug safely and easily with a trowel. Usually these lie close to the surface, though at different depths. Thus Bloodroot rootstocks are covered by a scant half inch of soil, but Canada lilies may lie six inches below the surface.

A plant that grows from a deeply set taproot will usually die if this taproot be cut, so when digging it the root must be followed downward and taken out as complete as possible. Columbine and a

few other small plants of this type can be taken out with a trowel, but to get the great plants of Heracleum or Angelica or Silphium a spade must be used. Once when digging a Silphium in Illinois I dug down along the root for 18 inches and then cut it by accident.

A plant that has widely creeping roots or underground stems is hard to dig out. If the roots of a plant of this type lie close to the surface it may be possible to get it out fairly complete by following them, sometimes for long distances. Once I followed the underground stem of an Apios for nine feet. In many cases it is more satisfactory to dig a long, wide and deep piece of sod which might inclose the plant and most of its roots, and to replant the entire sod. Polygala paucifolia and the Pyrolas have survived this treatment but Chimaphila and Chiogenes failed.

More plants succumb because of careless transportation than from improper digging. As soon as possible after a plant has been dug, its roots should be soaked in water, and then wrapped in wet newspaper, which should be in every collector's kit.

A plant collector should note carefully the environment in which his plants grow. The more accurate are his observations the more chances there will be of their survival after replanting. He should note the amount of sunlight they receive, that is, full sun, half shade or full shade, the amount of water in the soil where they grow, as bog, swamp, swale, wet meadow, moist woods, or dry, sandy soil. The character of the soil is very important, whether sand without humus, deep good soil, meadow or crevices in rocks. He should be sure of the chemical reaction of the soil, whether limy, acid or neutral. He must know that to have his plant live in its new location, it must be provided with as nearly as possible the same combination of conditions as it had in its original home.

To dig plants properly the collector needs only a few tools, but these should be the best that he can get. His trowel should be sharp and strong enough to pry out fairly large stones. A blacksmith made mine of heavy sheet steel which can be sharpened to a keen edge. Its handle is riveted on, and it is so wide that I can put my foot on it when digging in hard ground. A very handy tool is a small pickax about the size of a hammer with a cutting edge on one side and a point on the other. It is useful in stony ground and in soft ground it does as well as a trowel. For gathering plants in a bog a pair of pruning shears is needed to cut the sphagnum and the tough stems which it incloses.

If the collector gets about in an automobile he can carry a pair of knee-high rubber boots. These are better than high, laced-up leather shoes, for they can be put on when needed, and taken off easily when not in use. They are a great comfort in rattlesnake country, and without them it is always advisable to poke around with a stick before reaching down to dig a plant. Until recently I did not know that one of my favorite collecting places was also a favorite of Rattlesnake Pete, a professional snake hunter. With his boots the collector should carry in his automobile a spade, not the heavy, blunt, square-ended spade that the hardware man thinks he should have, but a light, thin-bladed, curved gardener's spade.

The botanist's "drum" (vasculum) is a good container for plants. It retains moisture, and it should always contain wet newspaper.

If a collector has dug and wrapped his plants carefully, and has noted the conditions which determine their growth, he must then know about the best methods of transplanting them so that they will survive.

Soil is a heterogeneous mixture of many constituents which fall into two classes, one inorganic, the other organic, soil. The inorganic soil is composed of particles of rock which vary in size from finest clay and silt to pebbles. From this inorganic mixture plants absorb from the

surfaces of the rock particles minute quantities of several substances in solution. These are built into their tissues and are necessary for their growth and well-being. This inorganic soil is the result of the erosion or decomposition of rocks, and it may be hundreds of feet deep or merely a thin film on some rock surface.

The organic soil or humus is made up mainly of the remains of plants, that is, the roots, stems and leaves of dead plants and the fallen leaves of living plants. The thickness of this soil varies in different places. It may be a thin film coating a rock, it may be a few inches or feet in a forest, or many feet thick in a bog or on ancient grasslands. It is important to plants for three reasons. First, it is highly absorbent; second, it is so loose in texture that it acts as a mulch, blocking the upward movement of capillary water at a point where roots can reach it, and third, as it decays it provides nitrogen in the form of nitrate salts which the plant roots can easily absorb, and also the inorganic material which the plants that formed it had accumulated during their life, and dying had left in the humus.

Every plant needs water to dissolve the salts which its feeding roots absorb from the soil, and to transport the solutions to those parts of the plants where they are needed. The plants receive part of this water directly from rain which wets the soil, and partly brought upward from the inorganic soil below it by capillary attraction. Part of the rain which falls upon the soil is absorbed at once by the organic material in the humus, part is pulled downward by the force of gravity through the lower lying soil. Because of capil-

A Sphagnum Bog Is a Good Place To Collect Plants

larity some water adheres as a thin film to the surfaces of the particles of rock which make up the inorganic soil. When the moisture in the upper levels of the humus evaporates or is absorbed by roots, its place is taken by moisture drawn upward by capillarity from the lower levels. This upward moving stream is a main source of water for plants. To be drawn upward to a point where roots can reach it, close contact between the rock particles must exist to allow capillarity to act, and anything which breaks this close contact prevents the upward rise of the capillary water. If a plant is to live, this upward rise of capillary water must be maintained continuously by compacting the earth below and around its roots, but to hold the water at the level of the roots the upward rise of water beyond their roots must be stopped by breaking this close contact. This is done by loosening the soil immediately about it, or by covering the soil about it with some loose material. This is called mulching, and a lack of mulch is a very usual cause for the failure of transplanted plants.

Elders Face Down a Reforested Area in Neutral, Sandy Soil in Full Sun

The organic soil or humus has the power to absorb a large amount of water, and also to retain it or to release it slowly. When it decays it makes available those salts which had been accumulated by the plants which formed the humus. Therefore a plant whose feeding roots are in this humus has available a store of the life-giving salts and also a plentiful supply of the necessary water. The feeding roots of most plants lie in this humus, which in most places is seldom more than a foot thick. Therefore transplanted plants are most apt to survive if they be so planted that their roots are set in this thin layer of humus or in a similar layer made up of a mixture of a large proportion of humus and a smaller one of inorganic soil. The humus may be root stems and leaves of dead plants, or peat, and the inorganic material may be sand, silt or even clay and pebbles. This must be a mixture, not a layer, for a layer of loose organic material of that thickness will act as a mulch and prevent the rise of capillary water. Gardeners often trench their soil, by which they mean that they dig a trench a foot or more deep, and put into it a layer of manure, compost or leaves, which they then cover with soil from the next trench. This is unwise for two reasons. Roots seldom reach down that far and so can not reach the food materials, and the layer of loose materials at the bottom of the trench acts as a mulch and prevents the rise of moisture. I have put manure in this way about peonies and have found it the following year still dry and undecayed.

Nearly every plant needs sunlight to convert by photosynthesis inorganic substances into organic food. Some plants demand a great amount for that purpose, but for some a scant amount suffices. Young seedlings of most plants do best in part shade until they are well established. Few sunlovers will thrive in

Twenty-two Species of Shrubs and Herbaceous Plants Grow in This Acid Plot

shade. Hepaticas will cover a sunny slope in spring but will stop short at the shade line of a single hemlock tree. Under deciduous trees, however, most spring flowers thrive, for they bloom before the unfolding leaves throw much shade. It is possible, therefore, to plant successfully all the spring flowers under deciduous trees or shrubs.

The chemical reaction of soil is of less importance for most plants than the other conditions. Most plants that can thrive in the alkaline soils of a limestone region, and many from the acid sandstones, conglomerates and granites of our hills and mountains, do as well, even better, in neutral soil. There are some in these groups, however, that will not succeed there, nor will the bog plants which demand acid conditions with much water. To accommodate the acid lovers, rhododendrons, mountain laurel, trailing arbutus, blueberries and others, neutral soil must be made acid by mixing with it various acid substances, oak leaves and bark, hemlock bark, ammonium sulphate, and perhaps tannic acid and alum. Most, but not all of the lime lovers will live in a soil made alkaline by mixing in hydrated lime.

From the above generalizations the following procedures seem indicated.

Collect plants carefully. Do not let their roots dry out.

Note the conditions under which they thrive.

Prepare small plots for plants that demand common conditions. A plot should be raised about six inches above the ground for drainage with a border of boards or stones to hold the soil. For easy care it should be about four feet wide or less, and near a water supply.

The soil in a plot should be at least six inches thick, well packed down, made of a mixture chiefly of organic material, leaves, stems, roots, small twigs or peat, and a smaller amount of sand, silt or good neutral loam.

For acid lovers mix in oak leaves, hemlock bark, pine needles, hemlock sawdust, ammonium sulphate or tannic acid. Plants of a sandstone region like a few thin sandstone flags on which to rest their roots.

For lime lovers mix in a little hydrated lime, or sprinkle it over the surface.

In this soil make a hole big enough to accommodate your plant. "A dollar hole for a ten cent plant." It should be just deep enough for the crown to reach the surface. Tread or tamp the bottom of this hole until it is firm. Wash the soil from the roots, and spread them carefully on the bottom of the hole. Cover them with the best soil you have. The crown should be just at or above the surface. Tread the soil fairly tightly about it. Spread about the plant a covering of loose material or loose soil as a mulch.

Your plant then will probably grow.

Wild Friendship

ALAN DEVOE
Hillsdale

: : : : : :

Nuthatches cling to his coat, wrens perch on his fingers, robins feed from his hand. These are some of Mr Devoe's adventures in friendship with wild birds.

THERE ARE plenty of good and practical reasons for extending kindness to wild things. Those reasons can be cogently expressed in the terse terms of statistics. The literature of conservation is able to make its argument eloquent with facts and figures that are mathematically impressive. Is it a practical and sensible thing to feed the birds in winter and give them nest boxes in summer and leave brush piles to afford them cover around the farm? Look in the statistical record, and the figures answer, saying how many weed seeds a tree sparrow eats, how many insect eggs a chickadee annually destroys. An intelligent charity toward bird and beast and tree is demonstrably a paying thing, in a way that can be shown in a ledger.

We human beings, however, have not only heads, but also hearts; and I think the argument of the heart is perhaps more compelling to some of us than even the most arresting statistics we may read. A house wren may be a resource, like a dollar in the bank; but to any man who has ever made such a friend of a wren that it perches on his finger or accepts nesting twigs from his hand, a wren is also something much more. A white-breasted nuthatch, the ecologists tell me, is a national asset. That is certainly one good reason for treating the nuthatch as a friend. But for me there is a better reason. There is the warming of the heart when I stand outside my farmhouse door and the nuthatches — my guests for a decade — perch upside down on my coat front with as comradely and trusting a friendliness as though I were the trunk of a tree.

For years now no shot has been fired on the hundred-odd acres of my land. All winter, constant provisionings have been put out for the birds (and for the deer and for all other hungry things), and in the early spring there have been put out birdhouses and twine and twigs and other usable nesting stuffs. I have gone out daily into the woods around the house, slowly becoming, season by season and year by year, more and more accepted by the wild things that find in this place a hospitality and peace.

The wild creatures' terror of humanity is not invincible. It is largely an acquired thing and can be dispelled. There are naturalists who believe that wild birds and animals are intuitively aware of the friendliness or the hostility in a man. That may well be so. In any case, they are assuredly responsive to a tone of voice and to a quality of mien, and they are sensible of what it means to be fed and housed and never molested. There can be brought out in them, with patience, a friendliness that must profoundly move the man who has striven to gain it.

Out of ten years of feeding the wild birds and trying to go gently among them that they might learn to lose the sense of humanity's alienness, what have I gained? Well, I suppose I have had a certain satisfaction in thinking of decreasing cutworms, the dwindling of tent caterpillars and the controlling of weeds. On oc-

Photograph by Alan Devoe

A Friendly Chickadee Inspects the Bounty of a Winter Cafeteria

casion I have taken thought, yes, of birds' role in the ecological scheme of things and have been happy in the knowledge of encouraging their useful performance. There has been joy in hearing songs, watching nesting and fledging and seeing the gray-white landscape of the country winter brightened by the spot of splendid color that is a purple finch. But chiefly, and most rewardingly, there have been simply adventures in friendship.

It took five years before a downy woodpecker would come to my hand for a morsel of suet, but at last it happened; and the final trustful clutching of those dry little claws around a forefinger was an experience not to be forgotten. Winter after winter the ring-necked pheasants remained shy; and then there came the day when at last they were sure of the spirit of sanctuary, and since then they have dozed by the dozen on my winter doorstep, fearlessly friendly. Year by year a red fox has slowly come to know I am a comrade; and I find him, now, at the kitchen door, wanting table scraps. Sometimes the friendliness of the wild birds has become almost incredible. There is the red-tailed hawk that roosts on the fence rail not a rod from my window: a wild and shotgun-harried hawk that has become as cozily companionable as a canary. There are the tree sparrows that light on my shoulders. There was the robin that took worms from my hand, to feed her nestlings, and there is the oriole that nests every year in the same elm beside the brook and has learned to come to me for strands of string. All winter long, endearing and astonishing, there are the chickadees. Ten years ago they fed at my feeding tray. Five years ago they fed from my hands. Today, to the frequent incredulous amazement of visitors, they accompany me for miles on walks through the woods, they ride on my hat and arms and stick, and when I open my study window on a frosty morning they come trooping indoors and crack sunflower seeds on my worktable and hop aboard the carriage of my typewriter.

Adventures in the friendship of the wild — those, I think, have meant more to me than any statistic. It is a time when such adventures can offer a vast refreshment to us all. In this dark day, it is no trivial thing to be reminded of the old, old peace of the earth, and to have our spirit reassured — if just by a flash of friendly wings, a lighting of a small unfrightened bird on an outstretched hand — that that peace, though we have lost it for a time, is still to be found enduring in the natural heart of things.

The Jamestown School Forests

G. E. BENTLEY
President, Jamestown School Forests, Inc.

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Started in 1927, this first school forest now is producing revenue and is a nature study laboratory in which the community takes pride

EARLY IN 1927, a group of Jamestown citizens was called together by Milton J. Fletcher, then superintendent of schools, to consider buying some nearby land suitable for reforestation. This land was to be owned by the city's schools and administered by a board of directors.

The original group consisted of Mr Fletcher, two members of the board of education, six teachers and two business men. After several meetings, organization was effected and the Jamestown School Forests, Inc, was launched. Many abandoned farms were examined and 150 acres in the township of Poland, about six miles northeast of Jamestown, were purchased early in 1928.

Arrangements for financing were made by asking each school to contribute a sum based on its number of pupils. The money was not to be raised by direct contributions but by entertainments and other affairs. These voluntary contributions have been the only source of revenue of the School Forests and they proved entirely adequate. At first each school was asked to give an amount equal to ten cents a pupil a year, but as the work of planting was completed and expenses decreased, the annual contribution was decreased. For the past few years, the contribution has been one and one-half cents a pupil a year.

In 1929 an adjoining farm was purchased, so that now the School Forests own 360 acres at an original cost of about $9 an acre. This land is a block almost exactly three-quarters of a mile square.

A considerable portion of this is already covered with a good growth of hardwood trees. About 250 acres have been planted with red pine, white pine and Norway spruce. Planting was started in the spring of 1928 and every spring since then 20,000 to 50,000 trees have been planted until the work is now practically complete. The American Legion helped in the spring of 1932, planting 5000 trees. The boys who planted the trees worked in pairs, one with a grub hoe and one with a pail of trees. One dug a hole after clearing away the sod, the other inserted the tree and tramped the dirt down hard. Two boys working in this way planted about 120 trees an hour.

The plantings of the first years are now about 20 feet high and are beginning to show the need of thinning. Last fall the directors decided that they would thin out some of the spruce for Christmas trees. Several hundred trees were sold with benefit to those remaining. This is the first revenue received from the project and all concerned are pleased. We feel that we have started something that is already a benefit to Jamestown, to Chautauqua county and to New York State. In the future, many citizens of Jamestown will be able to point with pride to the trees which they helped to plant.

Biology and nature study classes are able to make excursions to the forest and there study reforestation at first hand. It is also becoming a spot where birds, flowers and other forms of animal and plant life may be studied.

(Concluded on page 245)

Ornithology and Medicine

JAMES MONROE M.D.
Ray Brook

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A physician prescribes birds as well as medicine for indifferent, unhappy patients

TO MANY the word Adirondack calls to mind skiing, skating, hunting, mountain climbing — in short a vacation region. To others it represents a region where mining and lumbering are important industries. But to a large number of people it means a place where they go to regain their health.

About 60 years ago, Dr Edward L. Trudeau pioneered in recovering his health in the Saranac Lake region of the Adirondacks; ever since, health seekers have sought out this section as a place to live in order to regain their strength. Now, sanatoriums and health resorts dot the countryside for many miles.

Often when people learn they have a serious chronic illness, they become so depressed that they lose all interest in themselves, their environment, their former work, their friends and companions, and even in their future. To such people a hobby or pastime is a life-saving matter. Indeed, many such people become so absorbed in a hobby that it becomes their life work. Of course this is frequently the result of having to change from a strenuous occupation to one less strenuous. To a large majority, however, a hobby proves to be a source of never-ending interest, and in such their recovery is aided or even made possible.

I have seen people who were becoming neurotic and discouraged change into optimistic and self-confident persons just because they became interested in something other than themselves and their illness.

Pages could be written on various hobbies and interests, but I am concerned with one hobby — the study of birds.

Where there are buildings, porches, trees, shrubbery, grass, weeds, water and food, there will be birds. Since sanatoriums are usually located in the country, birds will always be near. When the connecting link between birds and humans — bird study — enters in, the ill, indifferent patient becomes a bright, happy, cheerful individual, and the cold uninteresting porch (where patients sit to rest and relax) becomes a place of great interest; a vantage point from which one can study and observe, and meet new friends who are ever happy and content.

When one sees his first pine grosbeak on a cold snowy day in winter, when all birds are supposed to be in the sunny South, there is no lack of excitement and interest, and such makes conversation for weeks. Not only that, the observer goes to his bird book and hurriedly searches for, "That bird I saw out there eating buds!" One's first glimpse of a Blackburnian warbler, redstart or Baltimore oriole is enough to make one's day or even a full week a happy one. I have seen persons who could have a successful day by simply seeing and learning to identify one new bird. To one not interested in birds this will sound foolish indeed, but it is true, and one needs only to become interested to prove its truth, and thereby insure interesting pleasant days.

The first pileated woodpecker I ever saw was flying toward me through the woods in the late spring afternoon. Its

underwing feathers are white (a striking feature) so I thought for a moment that someone's white leghorn chicken had flown from its pen and was loose in the woods. Imagine my surprise when I saw this bird in profile a few seconds later! Such experiences are never forgotten.

To those who have never seen the ill, unhappy, bored patient who could not be touched by people, books, radios, games or other sedentary pastimes, and who presents a serious problem to his doctors and nurses, family and friends, it is hard to imagine such a person. But to those who have to care for such an individual, the problem is most real and almost unsolvable. I have seen cases where medical science alone did not seem to accomplish all that could reasonably be expected, but once an interest in a hobby was aroused, the patients improved.

How many of you have seen the brown creeper, the white-breasted and the red-breasted nuthatches, the chickadees, the pileated woodpecker (that great carpenter of the north woods), the slate-colored junco (snow bird) and the friendly pine grosbeak who apparently feels that the Adirondacks are "South" for he spends his winters there? I have seen all these in the cold winter months, and have learned to identify them from a hospital porch and room.

What treats are in store for the bird-lover patient when he is finally able to take short walks! He will be able to closely observe those points which will simplify identification, that is, where seen, location of nest, habits, food etc.

On a blue rainy day when one is in dreary tune with the elements, to hear and see a song sparrow sing with his head pointed heavenward, is enough to make one feel a surge of joy, and immediately the gloom falls away and the day is bright even though the patter of the raindrops continues. I remember such an experience — it was the first time that I had ever realized, had ever noticed that the song sparrow, or any other bird for that matter, had more than one set song. That was a discovery!

One Sunday a friend of mine started to church, but on the way he saw a couple of house wrens and a pair of tree swallows contesting over a bird box. He sat down to watch the contest and see which side would win. Before he knew it, church was out and the wrens had won! He remembers the time and place, the participants and the outcome, even though it happened some years ago.

One of the best conversation pieces that we have is "birds." There are few who have not noticed some interesting happening in relation to this group of "individuals." Talk to the Kentuckian who has been away from home for some years and mention "Kentucky cardinal" to him. Immediately he becomes interested — you have conversation, and eventually you may have a friend.

Ornithology has so many facets and approaches that almost anyone can be interested. All that is necessary is the correct approach, and this frequently can be correlated with one's daily work. Music, painting, drawing, biology, flight, conservation and photography are all related to some phase of bird study.

One does not need to see the birds, for just learning to know their call notes and their songs is enough to identify each and to stimulate interest in that person who "has an ear for music." Now phonograph records can be purchased on which many of our bird songs have been recorded.

So ornithology and medicine, apparently as far apart as the poles, seem to be closely related in many instances, and vitally so in illnesses which require an interest outside of one's self. I truly hope you will never have to be ill to learn of birds, but should such come to pass, give the birds a chance, along with the medicine your doctor prescribes.

The Prairie Horned Lark in Dutchess County

ALLEN FROST
Poughkeepsie

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From their ancestral home in the barren prairies these ground-nesting birds have come East in increasing numbers

THE NORTHERN horned lark (*Otocoris alpestris alpestris*) and the prairie horned lark (*Otocoris alpestris praticola*) are the two of the 21 subspecies of horned larks that are recorded in Dutchess county. The northern horned lark comes to us only in winter in flocks of varying size and almost invariably when the flock is composed of a fair number of birds it is mixed with the prairie horned larks. Their abundance during the winter months is regulated more or less by the severity of the winter in the North and West. In the winters of heavy snowfall these larks appear in large numbers, whereas in the milder winters we get but few small flocks.

The prairie horned lark, since the year 1900 when it was found by Lispenard S. Horton nesting at Gretna in Dutchess county, has gradually increased in numbers. For a considerable number of years, however, there were no records made of this bird during summer months although the county was carefully canvassed for nesting birds. My first recollection of a prairie horned lark's nest in Dutchess county is of one for which I have no record. It was several miles east of Rhinebeck on the estate of Clinton Abbot and as he was compiling the records for his area, I failed to make a memorandum of the date. From that time until 1930 no definite records were made, but in 1930 two nests were found at Rock City — one on March 31st with four eggs, the other not 300 yards from the first with three young. On May 11th of that year, an adult male and two fully feathered young were observed at Bulls Head and on May 18th a singing male was heard at Schultzville. In 1931 we could locate no birds at Rock City but four miles northeast of the site of the nests found in 1930, we found on May 6th, a singing male at the Red Hook Country Club. On March 1, 1931, a pair of prairie horned larks was found on Chestnut Ridge and in the same place these birds were seen on May 17th. The following year, 1932, a breeding pair was back at the same spot. In 1935 on a large semibarren area known as Briarcliff Farms in Pine Plains two singing males were heard not half a mile apart. In 1938 one singing male was heard two miles east of Milan. In 1940 we had a singing male at Clinton Corners. In 1941 on April 3d we found a nest with three eggs at Salt Point and when it was inspected again on April 12th, the nest had four eggs. On April 16th there were four downy young and the pictures accompanying this article are of this nest. On April 22d, a nest and three young were shown to the writer on the fairway of the Dutchess County Golf Course. It was so much in line with the route taken by the golfers that the nest had to be marked and protected to

keep it from being stepped on. The most interesting feature in connection with this particular nest was that it was the exception that proves the rule. It was in a natural depression in the ground and had not been excavated by the female.

The history of the prairie horned larks in the East is of considerable interest. Their ancestral home is believed to have been the prairies of northern Missouri, Iowa, Wisconsin, Minnesota, eastern part of Kansas, Nebraska, North and South Dakota and southern Manitoba, where they occupied the most barren regions available. Their requirement seems to be bare soil or grassy areas and evidently the gradual extension of their range toward the East became possible through the development of agriculture and the clearing of farm lands.

This bird is almost entirely a ground-inhabiting species and it seldom perches in trees. It does, however, alight on fence posts or the tops of rocky outcroppings and is of course more exposed to predatory animals and birds than it would be otherwise. One author suggests that because of its preference for barren lands or farm lands, it has a certain amount of protection from man although it was at one time caught and sold in the markets of California. One of the government bulletins in referring to the food of the horned larks and their economic value states that although they are very largely seed eaters and consume an enormous number of weed seeds, during the early summer months they take a great many insects that are destructive to agriculture.

Photograph by Allen Frost

Four Receptive Young Prairie Horned Larks Await a Meal

Photograph by Allen Frost

Adult Prairie Horned Lark Delivering Food to Young, Dutchess County

Acknowledgment

This Arbor Day and Bird Day number of the BULLETIN TO THE SCHOOLS was compiled with the cooperation of the New York State Museum. All the articles were written expressly for the Bulletin and most of them were solicited by Dr Dayton Stoner, State Zoologist, and Dr Homer D. House, State Botanist. To the contributors of the articles and photographs, to Doctor Stoner and Doctor House, to Dr Carl E. Guthe, Director of the State Museum since March 1st, and to Dr Robert D. Glasgow, acting for the Director prior to that time, the editor extends his grateful appreciation.

Beautifying the School Grounds

ARTHUR K. GETMAN
Chief, Bureau of Agricultural Education

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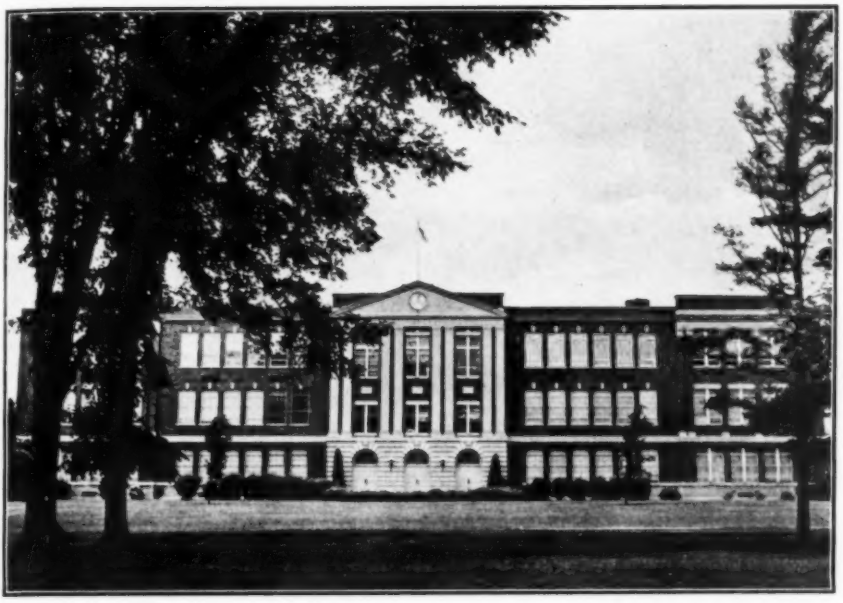
Timely tips to school officials desiring to improve the appearance of school property

DURING THE 46 years that Arbor Day has been designated by law "to encourage the planting, preservation and protection of shrubs and trees," there has been a growing interest on the part of school officials, teachers and pupils in beautifying the school grounds. Throughout the State there are many evidences of the use of plant materials to improve the appearance of school grounds. Communities are taking pride not only in school buildings that are well designed architecturally, but also in the beauty of the lawns, shrubs and trees, together with the landscaping design. Many of the landscape projects for school grounds, such as those pictured on these pages and on the inside back cover have been planned by professional architects. On Arbor Day considerable pupil interest may be aroused in the study of the landscape plan, in the types and varieties of shrubs and trees and in maintaining plantings by pruning, fertilizing and protecting from insect and disease injury. Also, small nursery rows may be established at the rear of the grounds and additional plantings may be made from this source or from collections from near-by woods or from local nurseries, to enlarge the pattern already established.

It is desirable to soften the outlines of the building and to relate it to the lawn by placing shrubs in angles and at points of advantage along the sides and by using tall slender evergreens at prominent corners. If a single shrub is used, it should be of a variety that branches outward from the base. Shrubs that grow taller and that tend to become bare near the ground should be planted behind others that are lower in type and that branch near the grass. Walk and drives are usually kept near the buildings and close to the border of the property. Areas that are badly cut up by walks, drives and paths lose much of their beauty. Straight walks have a special advantage when there are other straight lines in their immediate vicinity. A long straight walk bordered with shrubs or arched with trees leading to some vista or entrance gives a pleasing effect. Curved walks may be used to advantage especially with smaller areas when straight lines do not seem feasible.

Lawn areas, for the most part, should be kept open. Trees grouped in the background around the margin of lawn areas with shrubs and flowers in front offer an attractive setting. If possible, the grounds should be separated into more than one area. Architects usually plan to connect such areas with a lawn strip that is left open to allow an unobstructed view of the entire distance. This plan affords a sense of spaciousness that is usually not found in a number of separated smaller areas.

It is usually desirable in planning shrub placements to use several plants of the same type to secure what is commonly called "repose." The extent of these masses of shrubs will be determined by



Photograph by John Vrooman

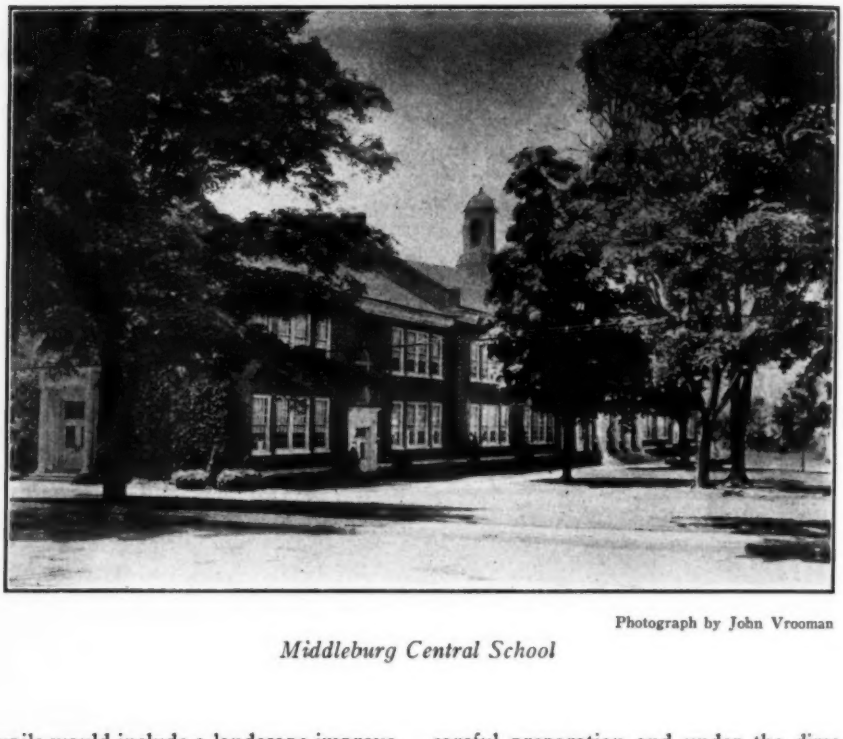
Cazenovia Central School

the extent of the areas around corners and the angles produced by bays, archways or doorways. When such areas are not available, masses of shrubs should not terminate sharply but should intermingle gradually with points of contact with the lawn.

When buildings are located, one of the first decisions which the architect makes concerns the use of trees that are already growing. Frequently it is possible to transplant some of the trees to more advantageous positions. The landscape designs shown in the three photographs reveal the use of trees in excellent ways. For the most part, these trees appear to have grown where they are now standing and the lawns and shrubs have been planned with reference to the tree placements.

Districts which have the advantage of architectural assistance in the landscape project have an excellent opportunity in using the impetus of Arbor Day to encourage the planting and protection of trees and shrubs, since all new plantings may be added to enhance an existing pattern. Other schools should be able to study the simpler plans for beautifying school grounds, to select plant materials from natural growths or from nurseries and to make a substantial beginning in beautifying the grounds.

Teachers of art, drawing and design, agriculture, home economics, science, industrial arts and the like will find many points of interest in the Arbor Day program to stimulate group activity on the part of pupils. It will be helpful to label the trees and the more important shrubs with metal tags as an aid to pupils in learning to identify the types and varieties of plant materials. Perhaps the most extensive activity on the part of



Photograph by John Vrooman

Middleburg Central School

pupils would include a landscape improvement plan extending over a period of ten or more years. Each year a senior class or other group could add plantings appropriate to such an organized effort. Another type of project would include the care and maintenance of lawns, the fertilization of plants and trees and the protection of the smaller plants and trees from insect and disease injury. The pruning of shrubs should be done only with the advice and direction of competently trained persons. Indeed, the planting, maintenance, fertilization and protection of all types of landscape materials should be undertaken only after careful preparation and under the direction of skilled persons.

Following is a list of publications that should prove helpful in assisting pupils to undertake the simpler landscaping projects. These bulletins may be secured from the State College of Agriculture, Ithaca, N. Y.

Bulletin 469, The Home Lawn

Bulletin 430, Lawn Maintenance

Bulletin 772, The Winter Hardiness of Some Ornamental Woody Plants of New York State

Bulletin 185, The Planting and Care of Shrubs and Trees

Bird Modeling

MALCOLM W. RIX
Schenectady

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A General Electric Company employe fashions lifelike metal models of birds so well that they are exhibited at the World's Fair

IN ORDER to create permanent interest extending well beyond the mere acquisition of a merit badge, Boy Scout counselors on various subjects endeavor so to present them that they will remain as avocations when the boys become men. With this object in mind long years ago as a newly appointed bird counselor, I carved and painted a few of the more brightly colored local birds. These included the Baltimore oriole, scarlet tanager, bluebird, redstart and goldfinch, all life size.

The models for my venture were mounted specimens kindly lent for the purpose from the Union College collection by Dr James H. Stoller. After considerable difficulty, due to lack of training and experience, the patterns of profile and front-back contours were marked on paper. When these were transferred to wood and sawed out, blocklike birds resulted. They were then carved and rounded into shapes approximating those of the models, sanded and painted.

The heads of black dress pins sufficed for eyes. Legs consisted of stiff wire of approximately the proper size. Feet were painted upon the perches. All painted surfaces looked hard and shiny. But the Scouts showed much interest, recognized the species and persuaded other Scouts to take up bird study illustrated by my pocketknife carvings. Therefore, the venture was a success. Later, when a younger counselor took over my duties, the wooden flock remained in the family and is now a proud possession of my granddaughter.

A few years ago, a friend, familiar with my interest, took me during a vacation trip to a quiet little village in a land jutting far out to sea. There a decoy maker had expanded his field to include the carving of bird models in general. To the door of his small shop was a beaten path like that leading to the shop of the man who made the world's best mousetrap. Out of the door, birds had gone to every state in the Union.

Within, were sea and wading birds of many kinds. Their postures, modeling and coloring were excellent. Seemingly, as an afterthought, there were a few perching birds. They suggested ever so slightly by the inclination of their bodies and the position of their legs that they would like to go wading, that the main interests of the modeler and his community were of the sea and its beaches.

Quite unabashed that my erstwhile amateur efforts were far short of these, my appraising eye carefully noted an absence of detail in bills, legs and feet. There was no softness in the body plumage. Primary, secondary and tail feathers lacked actual shafts and webs. Attempts to model raised wings and long tails of wood alone were either too clumsy or too fragile. Then came the thought: "Oh, well, man's work can never simulate Nature's." But on the trip home came another bolder thought. "Perhaps, by the employment of different technic, more than one medium and, as the laboratories say, 'special developments,' birds

Photograph by Malcolm Rix

The Stream-lined Body and Wings of the Common Tern Are Well Illustrated in This Model

might be modeled which, at a reasonable distance, would not leave too much to the imagination."

The thought was father to the deed and several misdeeds. The latter caused many disappointments and a small explosion of white metal which plastered protective goggles, scorched clothing and started a minor fire. The former produced methods now employed in my modeling as follows.

Perfect outlines of a mounted specimen are obtained by placing it against a vertical piece of ground glass at one end of a large, dark room (cellar) and placing a bright light at the other end. Lines marked on the glass are traced first on paper, then on wood. Outlines of specimens which can not be borrowed or handled are obtained by photograph in which a ruler marked in inches is included. The photographs are then enlarged to a degree in which the inches are of actual length.

Bills, legs and feet are white metal castings. Those of the legs and feet are reinforced with a protruding cast in bronze wire or rod, the respective ends of which are later anchored in body and perch. Dental plaster molds are made direct from the parts to be reproduced. When specimens can not be handled, black walnut models of these parts are carved and molds made from them. The process is a modification of that by which dentists produce dentures.

Raised wings are made of very thin sheet brass. All primary and secondary feathers are individually cut out. Shafts are indicated by placing each brass feather, upside down, upon a piece of soft wood and embossing the shaft by the stroke of a small screwdriver guided by a "ship curve." A gradual turning of the blade with increased pressure produces the desired taper.

The under side of the shaft consists of a brass sliver soldered into place. Webs are made by moving a hand grinder over the surface in the proper direction. All feathers are then soldered together between the wing coverts. The wing is then screwed to the body and the joint between the two filled with plastic wood. Tail assemblies are made and applied in the same manner.

As for bodies, the smooth, hard surface is broken, after sanding, by a thorough combing with short strokes of a piece of hacksaw blade. Tube colors are applied, but the white used in shading these is common flat wall paint. The flat paint on the combed surface produces a soft effect devoid of glare in natural light.

Chiefly because of my fondness for them when alive and happy, two quail, a pair of bobwhites, were my first effort. There have since been added a pair of passenger pigeons, a common tern and a male Labrador duck. His mate is now nearly finished. Due to war conditions and increased business activities, model production is now at a standstill.

As a vocation, original models of some species could be produced in two weeks.

Depending upon size and structure, others would require more or less time. It seems that, by using my methods or improved developments of their own, persons, such as those now in charge of manual training courses, could produce excellent results in this respect. High school pupils trained in such courses could then be instructed in the making of duplicates requiring only a fraction of the time necessary for originals. Much of the work could be done from templates and patterns made by the instructor. Bodies could be produced by a mechanical duplicator.

The products of a cooperative group, especially the extinct species, could go to supplement the collections now in colleges, schools and museums. Models of these species also might be used to advantage in illustrating talks sponsored by the several organizations and societies interested in bird conservation. It seems that frequent displays of birds that are no more would be helpful in creating a greater public interest in protecting those remaining. Obviously, the few and priceless mounted specimens can not serve the purpose. Models of these can be shipped exposed and handled. Mine have journeyed to numerous bird club meetings, hobby shows, Cornell University and the World's Fair. Only an occasional bath and a bit of retouching are required to keep them in good form.

Photograph by Edwin Way Teale

The Author Examines One of His Completed Models

Photograph by Malcolm Rix

Completed Model of Passenger Pigeon Arising in Flight

Jamestown Forests

(*Concluded from page 235*)

Many other schools have started school forests since the Jamestown project was started. To the best of our knowledge, ours was the first and we believe it is unique in its method of financing and management.

Special credit in this project should go to our former superintendent of schools, M. J. Fletcher. The initial idea was his, and his consistent support and cooperation since that time have been of inestimable value in carrying on the work.

Facts about Flickers

DAYTON STONER
State Zoologist, New York State Museum

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For its destruction of insects and for its energetic, vociferous self, this bird with the long tongue and elaborate vocabulary is entitled to our friendly consideration

MORE THAN 400 species of woodpeckers are known to science. As a group they are distributed throughout most of the forested sections of the world save Australia, Madagascar and Polynesia.

Among the 64 kinds of woodpeckers recorded from North America are nine kinds of flickers representing three species and six subspecies. Only one of these species and three subspecies are found east of the Mississippi river while but a single subspecies, the northern flicker (*Colaptes auratus luteus*), occurs in New York State.

Probably no other native bird is better known or commands greater popular attention than the flicker. Substantiating evidence for this statement lies in the large number of common and colloquial names — over 130 — by which *Colaptes auratus* and its subspecies are known. Most are descriptive of certain structural characteristics or peculiarities of habit which the bird possesses. Here are some of them: golden-winged woodpecker, yellow-shafted flicker, highhole, yellowhammer (this is the one that I learned as a youngster), wicki-up, wake-up, yucker, yarup, pigeon woodpecker, partridge woodpecker and gaffer. How many more do you know?

While a northern flicker or two often may be found in most localities in upstate New York in winter, the bird is essentially migratory in this latitude. Its migrations are performed mainly at night. The first spring arrivals reach the Albany region about March 20th. Most flickers have moved south again by late October though in favorable seasons I have seen presumably migrating individuals as late as November 29th (1942). On this latter date seven birds appeared to be traveling in a loose company; five of them alighted on an elm tree at the same moment. This method of migrating in scattered flocks characterizes both the spring and autumn movement.

In summer the flicker commonly inhabits old orchards, groves and sparsely wooded lake shores as well as farmyards and city parks often close to the scene of human activities. The bird is of frequent occurrence, also, on the lawns and in the trees of towns and villages throughout the State. Every season at least one pair nests in Washington Park, Albany.

A few of the outstanding structural characteristics of the flicker may well be mentioned here. These special modifications or *adaptations* enable their possessor the better to maintain itself in competition with other forms of life and in the "Struggle for Existence."

While most woodpeckers are essentially arboreal in habits the flickers are more terrestrial than any of their relatives. The short, stout legs and strong, sharp claws are equally adapted for resting or climbing on a vertical surface and for standing on a horizontal support. However, flickers are notoriously poor walkers. These birds, as do all other four-toed woodpeckers, have zygodactylous (yoke-toed) feet; that is, the inner and outer toes are

Photograph by Guy A. Bailey
Courtesy Bureau of Radio and Visual Aids
Adult Female Northern Flicker

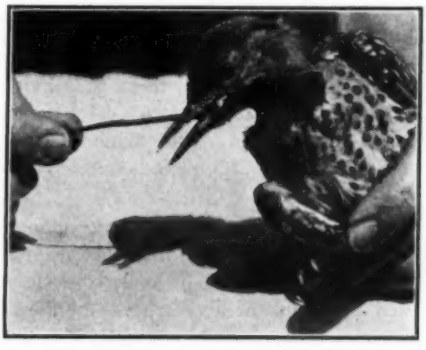
habitually directed backward, the second and third toes are constantly directed forward.

As a further aid in clinging to vertical surfaces, the tail-feathers are much stiffened and terminate in sharp spines which can be pressed against a tree or other support, thus serving as a prop to hold the bird in position as it works or sleeps. I have evidence on the latter point from northwestern Iowa when, at 9 p. m. on July 14, 1925, I discovered a male flicker apparently fast asleep and clinging to the sheer sides of a gravel pit with his head inserted in the mouth of a bank swallow burrow.

As in other woodpeckers the bill of the flicker is stout and chisel-like, fitted for cutting wood, a necessary activity in nest construction and securing food.

One of the most peculiar and interesting structures of the flicker is the tongue. It is more or less cylindrical and very long. In both appearance and bulk it resembles somewhat a moderate-sized earthworm. The tip terminates in a hard, barbed point. The base is extended in two long, slender processes of the hyoid bones — the structures supporting the tongue — which coil up around the back of the skull, often entering the right nasal opening and extending nearly to the end of the beak. At its posterior end the tongue is inclosed in a muscular sheath so that it can be extended to a considerable distance from the mouth and quickly retracted within it. Moreover, the salivary glands are extraordinarily well developed and their sticky secretions pouring out upon the tongue render it all the more effective; for insects such as grubs and ants which are not actually impaled by the sharp point simply adhere to the organ and may be drawn into the mouth from their burrows in wood or soil.

Characteristic of the northern flicker also is the undulatory or "bounding" type of flight, with accompanying wing



Photograph by Dayton Stoner
The Tongue of the Northern Flicker Is Long, Wormlike and Extensile

beats more rapid as the bird rises on the crest of the wave, slower as it descends into the trough. The yellow underwing color and the white rump — both good field characters — also are displayed to advantage in flight.

The courtship activities of the flicker are noisy and animated, and, to the human observer, often ludicrous. In this performance two or more birds may face each other on a branch and indulge in lusty gymnastic exhibitions such as bowing, dancing, swaying, extending the tail-feathers, waving and jerking the head, uttering rapidly or at intervals, a sharp *wick-up*. Individuals of the same or opposite sex may participate in these antics.

Perhaps it should be mentioned, too, that the flicker has the most elaborate vocabulary of any of our woodpeckers. One of the welcome spring bird notes — it is scarcely a song — is the loud, challenging courtship call of the male, *wicker — wicker — wicker*; often it is accompanied by a lively drumming on resonant wood or a metal roof.

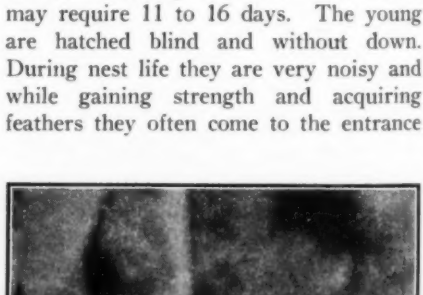
Following their spirited nuptial activities a nesting site is selected by the "engaged" pair. Sometimes the male appears to exercise this choice, again the female. The nest may be an old cavity which requires repairs or a new domicile may be excavated. Both birds participate in this work. In my experience in New York State old apple orchards often are the site of the northern flicker's domestic activities. Large apple trees, still living but with a soft, partly decayed heart, are frequently selected. Old maple trees — sometimes near highways — also enjoy preferential rating.

Of 15 nests that I have come upon in the Albany and Oneida Lake areas, nine were in maple, three in apple, one occupied the trunk of a pear tree, another a live elm and one was in a dead chestnut stub. Sometimes a fence post, a stump or a nesting box is acceptable. And occasionally damage to buildings is caused by flickers in their attempt to excavate a nesting site in a cornice or other part. The opening is about 2½ inches in diameter and, in trees, usually varies in depth from 10 to 24 inches. There is no lining and the white eggs are deposited on a bed of fine chips.

Flickers sometimes nest in unusual places as, for example, on open ground, on a pile of hay in a barn, in the cut ends of packed hay in a haystack, in old barrels and in burrows of the belted kingfisher.

Considerable publicity has been accorded the large families which the northern flicker sometimes rears. The usual complement of eggs is six or seven but clutches of eight to ten and even more have been reported. So far as I know this bird holds the record among our native species for the greatest number of eggs laid in a given time. On May 6, 1883, a nest containing two eggs was discovered in a large willow tree near Taunton, Mass. One egg was removed, the other left as a nest egg. This continued until within a space of 73 days the female deposited 71 eggs!

Both sexes take part in incubation, which, according to various observers, may require 11 to 16 days. The young are hatched blind and without down. During nest life they are very noisy and while gaining strength and acquiring feathers they often come to the entrance



Photograph by Dayton Stoner

Northern Flickers, Age 20 to 22 Days

Photograph by Dayton Stoner

Eighteen-day-old Northern Flickers at Nest Hole in Apple Tree

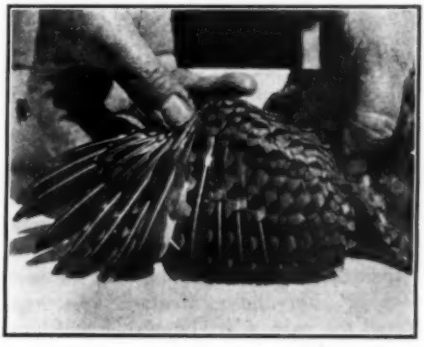
hole to receive food. Feeding is accomplished by regurgitation, during which performance partly crushed and macerated insects and vegetable materials are "pumped" down the throats of the youngsters by the adults. This procedure is accompanied by considerable spasmodic muscular activity and rapid bobbing of the head by the parent.

Growth rate in the young is comparatively slow; on the average, from 25 to 28 days are spent as nestlings. The average weight of young northern flickers at the time of hatching is about 5.5 grams. At age about ten days the eyes are open and, though considerable variation occurs, the average weight is said to be around 67 grams. Our own figures show an average of 97.98 grams for five 16 to 18-day-old birds, 110.12 grams for 20 to 22-day-olds and 104.7 grams for two individuals, age 25 to 27 days. It will be noted that in this species as well as in certain other hole-nesting birds such as the bank swallow, some recession in weight of the young occurs immediately preceding the time of leaving the nest.

Two adult females which we captured in June when they had young in the nest weighed, respectively, 134.4 grams and 138.4 grams. An adult male captured under the same circumstances weighed 141.9 grams. By way of comparison I may say that the approximate weight of this number of the BULLETIN TO THE SCHOOLS is 79.5 grams (about 2.8 ounces).

Feather growth in young northern flickers is correspondingly slow. For example, in one group of five nestlings age 16 to 18 days the outer (10th) primary was 22.5 millimeters long (a millimeter is approximately 1/25 of an inch) the outer secondary, 30.4 mm in length, the middle tail-feather 20.6 mm. At age 23 to 25 days the average measurements of these same parts on the same birds were as follows: Outer primary 43.6 mm; outer secondary 68.8 mm; middle tail-feather 48.4 mm. For five study skins of adult northern flickers, three males and two females, taken in New York State and now in the collections of the State Museum, these measurements average respectively: outer primary 38.8 mm; outer secondary 97.0 mm; middle tail-feather 101.1 mm. Whether the proportionate growth-changes cited would hold for a larger series of measurements remains to be determined.

It is well known that the body temperature of birds averages considerably



Photograph by Dayton Stoner

Upper Side of Wing of Northern Flicker, Age About 27 days

higher than that of mammals including man. The only temperature record I have for an adult northern flicker, a male that just entered the nest hole to feed young, is 107.8° Fahrenheit. The reading was obtained by a special, non-self-registering mercury thermometer inserted down the throat into the stomach. In the flicker, as in other altricial birds, the body temperature of the nestlings increases and the temperature control mechanism becomes more effective as the feather covering is acquired. Thus, on June 6, 1938, we found that the average temperature for five nestling flickers, age 16–18 days, was 105.4 degrees while for the two birds that were in the nest nine days later the average temperature was 106.8 degrees.

When young flickers leave the nest they are fully clothed in the juvenal plumage. Contrary to the condition prevailing in most of our land birds, this plumage is more like that of the adult male than of the female even to the black malar patches or "mustache." The young of both sexes carry this plumage until autumn, when they assume the first winter plumage. Only then do the female birds-of-the-year lose the mustache.

Flickers, like most other animals, have their enemies. Man has largely overcome his prejudices against these birds and, in the North at least, they are now seldom shot or hunted. Among the most formidable of their avian aggressors is the starling. Both species frequently nest in holes in trees and buildings but since the starling is the more quarrelsome and belligerent, the flicker often suffers from its invasions. For example, in Washington Park, Albany, in May 1941, a pair of flickers excavated a nest hole about eight feet up in the trunk of a large elm. The birds worked assiduously for several days leaving a large accumulation of yellowish drillings near the base of the tree. Shortly after the excavation was completed the pair of starlings that had been making life miserable for the flickers preempted the excavation and reared a family in it.

Photograph by Dayton Stoner

The Elm in Washington Park, Albany, in Which Flickers Excavated a Nest Hole, Only To Be Evicted by Starlings

Sometimes young flickers are infested with large reddish brown mites. On July 26, 1928, near Cleveland, N. Y., I found a nest with four young thus affected; despite the horde of parasites, the nestlings were in good condition.

Occasionally I have come upon adult flickers with certain toes and naked parts of the body bearing enlarged, gangrenous nodules. A male banded by us near New Salem, N. Y., on June 22, 1938, was thus afflicted. The outer anterior toe, the right tarsus and "heel," all bore these enlargements which were easily injured and bled freely. Another small nodule occurred on the outer toe of the left foot, both nostrils were closed by a similar somewhat corne-

Photograph by Dayton Stoner

Diseased Foot of Adult Male Northern Flicker

ous yet fleshy growth while even the palatal area of the mouth exhibited these peculiar swellings. The bird otherwise appeared to be in good health for it struggled energetically in and pecked viciously at the restraining hand.

A few days earlier, near Voorheesville, an adult female was captured in which the toes of both feet carried similar excrescences. Also the nail of the outer posterior toe of the right foot was missing, apparently having become detached with the sloughing epidermis of the toe itself.

I do not know just what causes this disease and accompanying deformation, which also occurs occasionally in the bank swallow. Possibly it may be associated with the more or less persistently damp condition prevailing in the nest cavity of both species.

Intensive studies by government investigators reveal that three-fourths of the 60 per cent animal food taken by the flicker consists of ants. One stomach is reported to have contained fully 5000 of these insects, some of which harbor plant lice in their burrows, destroy the frames of wooden buildings and infest our lawns to the detriment of their appearance and our lawn mowers. The terrestrial habits, long extensile tongue and extraordinary development of the salivary glands of the flicker all contribute to the bird's success in hunting out these troublesome insects.

Probably many of you have been able to approach closely a flicker while intently engrossed in this common feeding habit on your lawn. Perhaps, too, you may have observed the rapidly bobbing head and the movement of the cheek areas as the bird investigated an ant hill.

This feature of the flicker's diet alone places the bird under our obligation and renders it worthy of our protection.

Other insect food of the flicker includes beetles, grasshoppers, crickets, true bugs, caterpillars, grubs and the like. Many of these insects militate against man's best interests.

Of the approximately 40 per cent vegetable material comprising the flicker's diet, wild fruits, berries and seeds such as wild cherry, mulberry, elderberry, wild grape, sumac, dogwood and blueberry constitute the largest share.

In general, the economic status of the flicker is not particularly objectionable from the human viewpoint. The most serious charges against it are the destruction of a few predaceous beetles, the broadcasting of seeds of undesirable plants, its damage to poles of communication lines and its inclination to feed upon useful farm and orchard products. Its nuisance features are its early morning drummings and its occasional excavations for nesting sites in the cornices or other parts of buildings.

It is generally agreed, therefore, that the comparatively slight inconvenience and damage thus entailed are well compensated for by the destruction of insects inimical to agriculture, horticulture and forestry. And, too, simply for its energetic, vociferous self the northern flicker can justly lay claim to our friendly consideration and an indulgent and charitable evaluation of its economic relationships.

On the Trail of Henslow's Sparrow

F. H. WARD

Ward's Natural Science Establishment, Rochester

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Can you identify birds by their songs? A former State Zoologist relates how he learned to do so from an expert

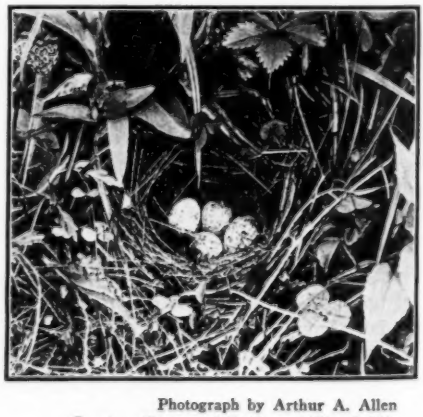
BACK in 1909 when I came to Albany as Zoologist at the New York State Museum, my knowledge of birds had been obtained almost entirely from the study of specimens that had been collected and prepared as study skins. Therefore, my ability to identify birds in the field by appearance or song was more or less limited. In the spring of that year it was decided that the taxidermist, A. J. Klein, and I should go to the Adirondacks during the migration period to observe the movement and, if possible, secure a few skins that were required to fill in gaps in the collections.

It was during this trip that I was shown some of the things that a really good field ornithologist knows. We had spent four days in the mountains with as much pleasure as the rain and black flies would permit. In early mornings we had listened to the salutes of the birds to the coming of day. Also, we had collected a few specimens. Soon we were joined by Seymour Woodruff of the State Forestry Department, who, while at Yale University, had been trained in ornithology by Dr L. B. Bishop.

One morning we walked to a likely place for birds to congregate and seated ourselves on a log. Then Woodruff asked us to listen and tell him how many different songs we heard and how many of them we could identify. I recall that at our first stop I reported eight songs of which I was able to identify five. Klein heard ten songs and identified six. Woodruff said there were 16 which we should have recognized. We were impressed but if we had had knowledge of the slang of today we would have said, "O Yeah?"

Toward the middle of the morning we came to a comparatively open space and, as usual, selected a comfortable log, sat down and listened. In a little while Woodruff remarked, "This should be the right environment for Henslow's sparrow. I have never heard one so let's wait and look and listen."

As we complied with his suggestion I was pleased with my own ability to recognize the notes of a song sparrow, a white-throated sparrow and several species of warblers and was about to boast about it when Woodruff loudly whispered, "Do you hear that note? It is that of a spar-



Photograph by Arthur A. Allen
Courtesy Bureau of Radio and Visual Aids

Nest and Eggs of Henslow's Sparrow

row I don't know but I think it is Henslow's." Again, our future vocabulary would have uttered "O Yeah?" Woodruff grasped the little collecting gun and started toward the sound while Klein and I remained on the log. Presently a shot rang out and back came Woodruff carrying a small bird in his hand; it was a Henslow's sparrow!

I am sure that if you went to the New York State Museum in Albany and examined the collection of bird skins there you would find a specimen of Henslow's sparrow taken by Seymour Woodruff in the spring of 1909.

After this demonstration of Woodruff's ability we did not again question his claims. When we returned to Albany a little later I brought with me something that has brought pleasure to every trip I take in the country. It might be described as a perceptive ear, for when one has become conscious of the songs of birds one always hears them, and an unusual note arouses a curiosity that is not satisfied until, with field glasses, the listener has traced down the maker of the song and called him by name.

While most of my readers may not be so fortunate as to have a Woodruff to open their eyes and ears to their environment, I am sure that they will be surprised at the amount of real pleasure they can obtain from a little knowledge of the birds in their own neighborhood. At the same time, the directive influence of a competent field leader is an asset of no little importance.

Cardinals in Western New York

LAWRENCE HOWE
Belmont

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Splashes of vermilion red against white snow as the handsome birds winter in Allegany county

IT WAS late in the fall of 1938 that I found in one of my birdbander's traps a female cardinal, the first it had ever been my privilege to see. Naturally, this was a great treat for the whole family, for cardinals were, in our minds, strictly residents of the Southland and not for the eyes of us in Allegany county. So this must surely be a straggler and the only one within hundreds of miles.

But, a few days later the lady cardinal appeared at our feeding station escorted by a brilliant male; and then came another male and then another female. Daily for weeks they came to gorge on sunflower seed and I succeeded in putting a numbered band on all four, and after that it became necessary to remove them from the trap almost daily.

It is impossible to describe the pleasure we all had watching them out the window. Many neighbors and townspeople came for a sight of them. Each day we wondered if they would come tomorrow or would forsake this cold northern winter for a sunnier clime. We could never forget those splashes of vermilion red against the white snow. The news traveled fast and strangers appeared at our door inquiring politely: "May we please see your cardinals?" Bird lovers and students of ornithology were amazed to find them in this locality and could not believe until they had actually seen.

Early the following spring, off they went to find nesting sites but we heard their whistle all summer and knew they had not gone far. The question then arose as to whether cardinals migrated. Reports reached us that cardinals occurred in various sections of Allegany county and in the adjoining counties of Steuben and Cattaraugus. Local residents who went annually to the Mount Morris and Geneseo flats along the Genesee river told of seeing them there and they were noted also in Rochester.

Now, cardinals like sunflower seeds in the winter but before they make their appearance at the feeding shelf in late November they eat all the wild grapes from the vines with which the banks of the river abound. These same river banks furnish the jungle and tangle which the cardinal chooses for its nesting site. So, perhaps it is the abundance of natural food, proper nesting conditions and water supply which have brought the cardinal to western New York and encouraged it to become a permanent resident. I have yet to hear of one that was more than a few hundred yards from a stream and I am convinced that the species is now commonly distributed along the Genesee river from its source at Genesee, just across the state line in Pennsylvania, to Rochester. It would seem also that this movement has taken place during the past decade, but of this there can be no certainty.

Of several reliable observers from whom I have made inquiries, almost every one has given 1936 as the year in which he first noted or heard of a cardinal in this section. Following is a portion of a recent letter from a friend in Mount Morris:

The first cardinal I saw was on April 1, 1937, along the Geneseé river. The following week, I found the nest with two eggs. I have pictures of it showing three eggs and one bird hatched; then, something took the eggs, one by one and finally the young bird. In the fall the adults disappeared. On April 24, 1938, I saw three males and two females; found no nests and did not see the birds after fall. In 1939 saw them first on February 25 and later found one nest in which a family of young was successfully reared. Saw them all that fall and during the winter and spring. In 1940 found two nests, eggs in one being destroyed by something. Remained all winter.

In 1941 found four nests. Remained all winter.

In 1942 found seven nests and in 1943 found seven nests. Toward the end of summer the numbers of individuals coming to my feeding station dwindled and now there are none. I have noticed while hunting pheasants on the Genesee river flats from three to five cardinals and when I went back to the same spot in December and January found from ten to twenty. I think the food there is more to their liking and they remain there all winter. This may have happened during the winters of 1937–38 and 1938–39. The cardinals have given us no end of pleasure. In the summer we could hear them snapping the sunflower seed apart and by the quality of their chirp my six-year-old son and four-year-old daughter could tell whether it was "Mama" or "Papa."

This year one of the nests was in a cedar with four young, and eight inches away, on the other side of the trunk, was a robin's nest with four eggs; all eggs hatched. I am sure that two pairs of cardinals had two broods in one season.

For the present we can only guess that these handsome aristocrats have, pair by pair, moved into this region from perhaps more southerly points, and gradually have become accustomed to our rigorous winters until they are now well established as permanent residents; possibly they may now be found in the tangle along any stream which affords a bounteous food supply and favorable nesting conditions. I would say there is some movement in the fall, no doubt inspired by the food supply or the lack of it.

This winter we have had three males feeding at our station daily; they suddenly disappeared but I find they are just visiting at a feeding station in another part of the village. None of the previous years' cardinals has been observed this season so we are assuming that they have moved on, perhaps westward, southward, only a mile or two, or perhaps the breadth of several states. Can we ever know?

Some Adirondack Pioneers

RALPH S. HOSMER

Professor of Forestry, Emeritus,
Cornell University

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To these "old timers" of a century ago we owe our rich heritage of Forest Preserves

EARLIER ARTICLES in this Arbor Day Forestry Series have told of some of the men who helped to bring forestry into being in New York State. This year attention may be called to certain "old timers" who as pioneers in the Adirondacks first awakened the interest that in later years led to the creation of the Adirondack Forest Preserve. The purpose of this article is to recall a few incidents of that story, with the hope, frankly, that those who read it will feel the urge to learn more of that period in the history of our State.

In their Forest Preserve the people of New York State have a unique possession. Few localities anywhere in the world can offer a happier combination of satisfying mountains, beautiful lakes and streams, and places of scenic and historic interest, all set in forest of a character that lends itself to an unusual degree to human enjoyment. And all this within only a few hours travel by rail or automobile from the greatest centers of population on this continent. New York State is indeed fortunate in its Forest Preserve. The best part of it all is that both divisions of the preserve — the Adirondacks and the Catskills — a gross area of over 2,400,000 acres, belong to the people and are set apart forever for their use and enjoyment.

Such a holding is not created and set up overnight. Behind the Adirondack Preserve stretches back an extensive history, the record of the continued efforts of a long line of active and persevering men. The Catskill Forest Preserve also has a rich historical background, even more intimately tied in with the birth of our State and our Nation. But, as Kipling used to say, "That is another story."

In the 18th century the Adirondack region was indeed a wild and forbidding place. It was a hunting ground for various Indian tribes. It was, as well, the frontier between the Algonquins of Canada and the Iroquois — the "People of the Long House" — of Central New York. Because of the constant warfare which prevailed between these tribes, the region was known as the "dark and bloody ground."

Those who know say that the present name of this region comes from the term which the Mohawks applied in derision to the Canadian Indians — "adirondak," meaning "tree eaters." Today the name Adirondacks includes all that great block of land, roughly 80 miles north and south by 100 miles east and west, which lies north of the Mohawk river and south of the St Lawrence River valley, and stretches from the Black river on the west to Lake Champlain on the east. Officially, the "Adirondack Park" lies in the 12 Adirondack counties, in area 4,604,000 acres. The boundary of the "park" is the famous "Blue Line." The lands owned by the State within the Blue Line constitute the bulk of the Adirondack Forest Preserve. Privately owned lands within the Blue Line are not parts of the Forest Preserve.

One of the methods by which what is now northern New York State was sub-

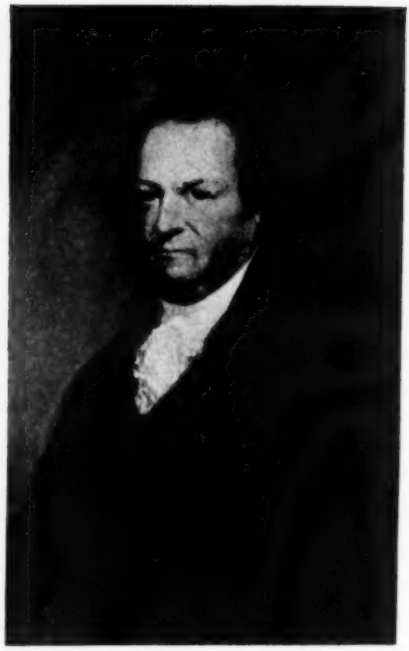
divided for settlement was by means of land grants, or patents, made out originally in the name of the Crown; or later, after the Revolution, by the then newly organized State of New York. Of the twenty or so grants which covered the "Great North Woods," five or six stand out because of their size or the importance of the localities they include.

Among these were the Totten and Crossfield Purchase, the several Macomb Great Tracts and the old Military Tract. In the first lie most of the higher peaks in the Adirondacks, as does also most of the upper watershed of the Raquette river. Joseph Totten and Stephen Crossfield were shipwrights of New York City. For a consideration they permitted the use of their names to head the company of associates who were really behind this great land deal. But so long as Adirondack land titles hold, their two names will continue to be repeated.

There is a wealth of fascinating history connected with these old land patents and with the opening of the Adirondacks, that has never been written adequately in a popular manner. For those who desire to know more of this subject, a good way to start is with Alfred L. Donaldson's comprehensive book in two volumes, A History of the Adirondacks (New York, The Century Co., 1921). Its pages well repay careful reading.

The practice by the State of selling its "wilderness lands" was by no means confined to the earlier decades of the past century. The custom continued into the 70's, or even later. In many instances virgin forest land was sold at prices which today seem ridiculously low, many tracts having gone for only a few cents an acre. There were individuals, however, who dissented from this practice and policy, and who were courageous enough to say so.

One outstanding public man of the first quarter of the 19th century was Governor DeWitt Clinton. Thought of first today, perhaps, as the instigator of the original



De Witt Clinton

Erie Canal, Governor Clinton deserves remembrance on other grounds as well. He did much to help establish our public school system. He was an astute and far-sighted statesman. Governor Clinton naturally had in mind, as have others of his time and since, the need of the Erie Canal for water from certain of the streams that flow south from the Adirondacks. But he also looked beyond, to larger benefits for the people.

In his opening message to the New York State Legislature, on January 2, 1822, are these significant statements:

> Our forests are falling rapidly before the progress of settlement, and a scarcity of wood for fuel, ship and house building, and other useful purposes, is already felt in the increasing prices of that indispensable article. No system of plantations for the production of trees, and no system of economy for their preservation, has been adopted. Probably none will be, until severe privations are experienced. . .
>
> It is certainly expedient for the Legislature, on all great occasions, but especially in relation

to future internal improvements, to cherish a prospective spirit, and to provide in season for the exigencies of future times. The creation of a general board of public improvements would be a wise and patriotic arrangement. This board, selected from our most enlightened and public-spirited citizens, and invested with power to establish and facilitate all useful channels of communications, and all eligible modes of improvement, would be enabled, by a judicious application of the public resources, to conduct us to an elevation of unparalleled prosperity. (Messages from the Governors. C. Z. Lincoln, editor. Vol. II. Albany 1909. Pages 1094 and 1096.)

The northern wilderness is not specifically mentioned in the above paragraphs, but Governor Clinton's ideas about the use of public resources were such that his recommendations could have been considered equally well by the commission to study the Adirondack situation which was set up by the New York Legislature just 50 years later, in 1872.

The Adirondack region, being for the most part high in elevation, and so with but a short growing season, has never figured as a part of the State well adapted for agriculture. The region was for this reason settled but slowly.

Donaldson tells entertainingly of the early settlers, the hunters and trappers, and explains how these men later became the guides of those who wished to explore the wilderness. Pioneers of another sort were the technically educated men who first visited the Adirondacks in the interests of scientific work. In this group belongs Professor Ebenezer Emmons, who in 1836 was appointed to the Geological Survey of New York. He it was who in 1838 proposed the name "Adirondack Group" for "the cluster of mountains in the neighborhood of the upper Hudson and Ausable rivers." Emmons was the first to climb Mount Marcy, the highest Adirondack mountain, 5344 feet, and to give to it and others of the neighboring peaks the names they have since held. He continued to work as geologist in New York until 1842, and then for four years carried on an agricultural survey of the State.

VERPLANCK COLVIN

Another scientifically minded lover of the Adirondacks was Dr Franklin B. Hough, who in 1876 was appointed the first Special Agent in Forestry in the United States Department of Agriculture. Doctor Hough's writings, based on his intimate personal acquaintance with the Adirondacks, gave to many persons their first accurate information about this portion of New York State. For notes on Doctor Hough, see the BULLETIN TO THE SCHOOLS for March 1940, page 227.

The man, however, who probably did more to introduce the Adirondacks to an ever-expanding audience was Verplanck Colvin, for over a quarter of a century, 1872 to 1900, superintendent of the Adirondack Survey of New York State, and for seven years prior to that active in private surveying work which led him to all parts of the northern wilderness.

Born in Albany, January 4, 1847, Verplanck Colvin as a young man read law in the office of his father, Andrew James Colvin, and for a time practised it. But his real interests always lay in science,

particularly in geology and in the field of geodesy and the broader aspects of topographical surveying.

As superintendent of the Adirondack Survey he designed and was responsible for the basic triangulation system which located with precision all the important peaks and other essential landmarks, and then, by instrumental leveling, carried up to the highest mountain tops, determined, with mathematical accuracy, the exact elevation above sea level of each point.

Verplanck Colvin had a pleasant style as a writer and was a ready speaker. When describing some new "find" of scenic interest or discussing the bearing of newly made scientific observations, the text of his reports is anything but the dry pages which one might expect from the field notes of a survey. Besides maps and charts illustrating the methods used in the triangulation work, and the tables of latitude and longitude and of elevations, some of the Survey reports carry plates, drawn by Mr Colvin, which outline ranges of mountain peaks or sketch chains of lakes amid their surrounding forest-clad hills. It is no wonder that tourists soon began to search out spots in the wilderness to which their attention had been so persuasively drawn, and that it was not long before camps, and then hotels, were required to accommodate the increasing summer tourist trade.

Three items of especial interest are to be recalled in connection with Verplanck Colvin. First, he was the discoverer of Lake Tear-of-the-Clouds, that little pool, which, nestling high on the upper slopes of Mount Marcy, is the true source of the Hudson river. Second, he emphasized the suggestion of what may sometime become a necessity, that it is possible to divert water from the Raquette river watershed over to streams tributary to the Hudson, and so augment the flow which may some day be required to supply water to the cities and towns that will ultimately line both banks of the Hudson river, all the way from New York City to Albany. Third, he was proud to claim that he had been the first to recommend that the Adirondack region should be set apart and maintained as a great forest park for the people of New York State. He died in Albany in 1920.

Both Hough and Colvin were on the State Park Commission, of which ex-Governor Horatio Seymour was chairman, which was set up in 1872 to report upon the feasibility of creating a Forest Reservation in the Adirondacks. Hough advocated a rounded program of management for the forest that envisaged economic use as well as esthetic enjoyment. He argued essentially for the sort of management which our National Forests are given today by the United States Forest Service, under the term multiple use. Colvin, on the other hand, was ever the vigorous proponent of the park idea, holding that in the public use of the Adirondacks recreation should have first place. He served as secretary of the commission.

No action was taken by the Legislature on the report of the State Park Commission. For more than ten years it lay unregarded in a pigeonhole. But the ideas back of the commission's suggestions had too much merit to be entirely forgotten. In the hands of another committee, in 1884, these earlier recommendations helped give direction to the report which led to the Forest Preserve Law of 1885, the organic forest act of New York State.

Although that date is now nearly 60 years ago, the year 1885 marks the beginning of present-day forest policy in New York. From that year to this there has been unbroken continuity in the administration of our Forest Preserves. They are now safe and well cared for under our efficient Conservation Department.

We of today have good reason to be grateful to those pioneers of around a century ago. The rights and privileges which we enjoy in our Forest Preserves we owe to their foresight and determination. It is a rich inheritance that has come down to us. Those who gave it must not be forgotten.

Banding Thrills

MALCOLM J. LERCH
Penn Yan

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A bluebird in an unused stove; a chickadee that learned how to avoid the trap — these are some of the thrills

DURING MORE than two decades of banding, the United States Fish and Wildlife Service has accumulated a vast store of scientific data about the birds of this continent. Many interesting facts concerning their migration and nesting habits have been disclosed. In addition to these, however, there must be many side notes which do not show in the reports. During the years that we have had a banding station we have experienced many unusual happenings.

Perhaps our most interesting bird was an immature eastern bluebird. We banded it, along with four brothers and sisters, while it was still in the nest. Two days later, on July 21st, the bird left the nest, which was located in a fence post nearly one-half mile from our home.

Early on the morning of August 18th we heard peculiar sounds issuing from the inside of the kitchen range which is unused during the summer. We looked inside the oven, firebox and even the reservoir. Nothing was there, but when we removed a small clean-out door near the base a soot-covered bird emerged. It was an immature bluebird with band No. 138-14594 on one leg. Our record showed that it was one of the family banded almost a month previously. What caused it to come down the chimney and become trapped is a mystery. Since then two starlings have been caught in the same place.

The common redpoll is one of our rarer winter visitors. Some years we never see this tiny tourist from the Northland but in 1939 several visited us. On February 15th we trapped one redpoll along with several tree sparrows. It was given band No. 39-16705 and released. Later we received word from Washington that this bird had been found dead at Bradford, Mass., on March 13th. It had moved from central New York State to the northeast corner of Massachusetts in about one month.

One of our most abundant summer birds is the song sparrow. Evidence that

Photograph by Verdi Burtch

A White-breasted Nuthatch Inspects the Suet Supply

two individuals remain together during migration is given by notes on birds Nos. 38-79175 and 38-79176. They were trapped together in our garden on April 10, 1938, and were recaptured again together on May 5, 1939.

During the winter months chickadees are daily visitors at the feeding shelves. We have found that they are especially fond of black walnut meats. Sometimes we place a trap on the shelf outside the window. Usually we use what is known as the false bottom trap. It is so constructed that the weight of the entering bird upon the false bottom pushes it down and disengages a catch on the sliding door. The door then falls of its own weight to imprison the visitor. We watched a band of chickadees one day as they visited the feeding station. One of them was immediately captured in the trap. He had been banded before, so the band number was tabulated and he was released. In a few minutes the same bird was recaptured. The next time he approached the trap, however, instead of hopping on the bottom of the trap he jumped up and clung to the side of the trap. Of course the trap did not spring, so he was able to reach down, pick up a piece of walnut meat and fly safely away. Who says birds are "dumb"?

With the exception of the song sparrows in the summer and the tree sparrows in the winter, we band more white-crowned sparrows than any other species. These large trim-appearing sparrows with their prominently striped black and white crowns usually appear during the first week in May. Their numbers increase quickly and then gradually wane until the last stragglers are seen about the 23d or 24th of the month. During the 1939 migration period we had seven traps scattered about the lawn and gardens. Many white-crowns were captured several times in the course of a few days. Some individuals entered the traps as many as four times in one day.

The barn swallow is one of our common summer breeders. Many pairs build their shelf-shaped nests of mud on the sides of the floor joists in barns with open basements. In the late summer the families band together to begin their migration. They roost at night on the cattails in small marshes along with hundreds of starlings, red-winged blackbirds and cowbirds.

A fellow-bander told me of capturing barn swallows with a net and flashlight, so one evening we decided to try it ourselves in a marsh near home. As we rowed down the channel toward the marsh about dusk we counted over 60 barn swallows perched in rows on the light wires overhead. Nearer the marsh the air was full of flying birds. There were red-wings, starlings, cowbirds and swallows circling and swooping over the cattails. Hundreds would settle down together upon their roosting places only to rush back into the air again a few minutes later. This restless activity continued until almost dark but finally all had found a place to their liking.

We waited until about 9 o'clock and then began to row slowly along the edge of the cattails. One of us rowed the boat while the other stood in the stern with the light and net. Upon discovery of a roosting bird we approached as quietly as possible and attempted to capture it in the net. We soon found that the swallows were easily frightened if the foliage near them was disturbed. They usually flew away just before we were within reach. Our net proving to be of little help, we discarded it and captured the birds with our hands. It was surprising to find how easily one could slowly reach out and grasp a roosting bird while blinding it with a light. The main trick seemed to be a noiseless approach.

Our efforts were rewarded by the capture of 28 barn swallows.

The birdbander never knows what thrills are "just around the corner."

Bird Skins for Teaching Teachers

ROBERT A. GREENE
Geneseo State Teachers College

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BELIEVING THAT our students, who will shortly be teaching in the elementary schools of the State, should be able to identify most of the common birds and know something of their occurrence, life histories and values to man, we maintain a teaching collection of the skins of New York State birds for use in the college courses in ornithology. The business of securing skins for such collections has become increasingly difficult in late years and particularly during the war period. Shortages of proper ammunition and the decreased number of qualified collectors have brought onto the market duplicate skins from some of the older collections but the number and quality are decidedly low. Included in a small purchase from a supply house a few months ago were the skins of several birds collected around 1870.

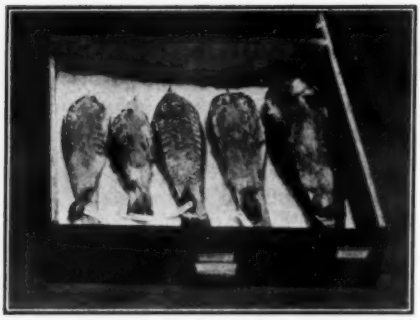
We have, for many years, attempted to secure skins for use in the college by casual methods rather than by collecting direct. Most grade school children know that, by law, they are not allowed to take or keep most of our common birds. Consequently, when they find a dead bird they bring it at once to the science department, where it is gratefully received and the bird examined for preservation. A great many of these birds have been caught, and too often mutilated, by cats, but many skins are salvageable and make a slow but continuous increase to our collection. Many of our college students, especially during the summer months, commute from some distance by automobile and, in traveling the roads to attend an early morning class, they can pick up a considerable number of highway bird casualties before they are ruined by the sun or later traffic. Most of

A bald eagle and a black vulture are among the unusual specimens brought to the college

the specimens thus secured are of the commoner local species and probably would not be retained for a comprehensive specimen collection; but, for our teaching purposes, these are exactly what our students need to know most about and we are glad to receive them. To each prepared skin is attached a data tag indicating the way the specimen was secured and including the name of the collector, which gives some personal satisfaction to the finder, be he young or old.

Through this channel have come to us, among others, such birds as robins, bluebirds, wood thrushes, barn and bank swallows, hairy and downy woodpeckers, one red-bellied woodpecker, sapsuckers, flickers, a great blue heron, sparrow hawks and Baltimore orioles. A tufted titmouse, the first I had seen here, was brought in one morning and that afternoon we saw live ones in the field. We have never observed them since. The main thing in securing specimens this way is, of course, to have a large number of people, grown or small, conscious of our need and on the watch for this material all the time.

Recently a couple of local high school boys who had been hunting told their science teacher of an enormous "crow" they had shot. To justify their claims, they went back where the bird had been shot, found it frozen in a snowbank and brought it to school to prove their point of size. The bird was a fine specimen of the black vulture, *Coragyps atratus*



Photograph by E. J. Stein
Courtesy New York State Museum

Study Skins of New York State Hawks

atratus, a rare accidental visitor and recorded, according to Eaton, only eight times in New York State. The skin has become one of our treasured possessions.

Some time ago we secured another difficult-to-obtain skin. A near-by farmer lay in wait with his shotgun for a "hawk" that was regularly stealing his poultry. In due time the predator appeared, was killed, and, because it had a wing spread of about 50 inches, was proudly exhibited to a plumber from the village hardware store. He, in turn, asked to display it in the store window as "the biggest hawk ever seen around here." Curious villagers stared at the big "hawk" stretched out among the hunters' supplies but a better informed game protector, when he saw it there, recognized it as an immature bald eagle. The farmer was, in time, duly arrested for killing the American Symbol and the case went to court. Meanwhile, the bird was refrigerated and kept as Legal Exhibit Number One. When the case was finally settled, the bird, which would normally have been cremated, was given into our custody, made into a study skin and duly tagged with its case history and the proper permits to keep it for scientific purposes.

Thus our teaching collection of study skins grows and from its use our bird students learn from "a bird in the hand" to build up an intelligent recognition and knowledge of our local species and to become well-grounded teachers of bird study.

Banding Ospreys on Long Island

LEROY WILCOX

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Though he has banded species seldom handled by other bird-banders, this Long Island bird-lover still gets his biggest thrill from banding these fish hawks

OF THE 85 species of birds that I have banded none has given me quite the thrill that I still experience in banding fish hawks. This despite the fact that I have banded a few species seldom handled by other birdbanders such as willet, turnstone, knot, dowitcher, yellowlegs, sanderling, six beautiful red phalaropes (only four others banded), the first known young great black-backed gull reared in New York State, as well as 749 piping plovers, which is the largest number banded by anyone.

Nesting fish hawks are confined to the eastern half of Long Island. There are about 494 nests on Long Island with the westernmost nest where young are reared at East Moriches, some 70 miles east of New York City.

Photograph by LeRoy Wilcox

Young Ospreys, Age 44–45 Days, on Ground Nest, Orient, Long Island, July 26, 1941

About 745 eggs were laid in the 321 nests that I have examined during banding operations. The young were not banded until nearly half-grown. In these 321 nests there were 704 live young, 27 unhatched eggs in 22 nests and 14 dead young in or near 11 nests. In all these nests only 7 contained 4 eggs or young, 142 contained 3, 119 contained 2 and 53 nests contained only 1 young.

Three fresh eggs on May 9, 1941, at Orient weighed 72.5, 72.2 and 68.5 grams. On June 7th two of these eggs were pipped while a young had just emerged from the other egg. This newly hatched young weighed 54.1 grams; 7 days old, 216.4 grams; 14 days, 595.1 grams; 21 days, 1000.8 grams; 28 days, 1298.4 grams; 35 days, 1433 grams; and 42 days old, 1433 grams. When 49 days old this young flew out of the nest (the other two young remained). In another nest two young left when 52 days old.

I have banded 641 young and 11 adults, which I understand is the largest number of fish hawks banded by one bander. To date I have 51 recoveries, or about 8 per cent of those banded. Since the fish hawk is protected in most eastern states, probably other banded individuals have been shot and the band numbers not reported. Of the 51 recoveries, 16 have been shot, 15 found dead, 6 captured, 5 have been killed in various ways, 2 found dead in fish nets, 2 killed by electric wires, 2 trapped on nests, 1 caught in steel trap, 1 carcass only with band found and one band only found. Of these recoveries, 37 were under one year old on first flight south, 2 were one year old, 7 were two years old, 1 was six years old and 2 were ten years old.

I had always been fascinated by the stories I had read about the largest colony of fish hawks in the world which was reported to be located on Gardiners island off eastern Long Island. It was not until July 20, 1928, that I made my first trip to Gardiners island and since then I have spent some pleasant days on this island noted for its bird life. In 1941 I made a complete trip around its 15 miles of shoreline with an outboard motor in order to count all ground nests within 200 to 300 feet of shore. I counted 69 nests on rocks or on the ground, only four of which were on the eastern shore.

Photograph by LeRoy Wilcox

Banded Osprey, Age 51 Days, Orient, Long Island, August 2, 1941

Photograph by LeRoy Wilcox

This 51-Day-Old Osprey Weighs Approximately Three Pounds, Orient, Long Island, August 2, 1941

Roy Latham of Orient advised me that he covered the whole interior of Gardiners island in studying its plant life and found about 30 ground nests in that section. This would make the total number of ground nests for the island about 100. In 1930 Latham estimated 295 nests on Gardiners island.

On the mainland of Long Island I know of only three ground nests. Gardiners island probably has many more ground nests of this species than all the states on the Atlantic coast.

It is rather easy to follow the increase or decrease of nests on Cartwright island which is a part of Gardiners island; it is about one-half mile long and approximately one-half mile south of Gardiners. There are no trees on Cartwright. It has the southernmost colony of nesting herring gulls on the Atlantic coast as well as the first pair of black-backed gulls to nest in New York State.

The first count of fish hawk nests on Cartwright that I can find is that of Latham, who found nine nests on his first visit there in 1910. In 1915 he found 11 nests. My trips to Cartwright show the following number of nests: in 1938, 18 nests and 34 young; in 1939, 24 nests and 42 young; in 1940, 26 nests and 36 young; in 1941, 18 nests and 28 young; and in 1942, 14 nests and 31 young.

I believe that fish hawks do not nest until they are at least two years old. The only recoveries I have for one-year-old birds are one young banded July 3, 1941, on Gardiners island and killed May 5, 1942, at Matanzas bay, Cuba, and another young banded June 20, 1936, at Orient and found dead August 12, 1937, at Ilhees, Brazil. Fish hawks are common in parts of northern South America during April, May and June. These are possibly young birds, under two years of age.

From returns that we have it would seem that more than one-half the young return to nest in the area in which they were reared. Four young banded at Orient returned there during the nesting season, two when they were two years old, one that was six years old and another that was ten years old. H. H. Cleaves banded a young on Gardiners island and 21 years later it was found there with its leg caught in the crotch of a tree.

In 1941 I succeeded in trapping 11 adults on their nests on Cartwright; nine of these were unbanded and two were wearing bands that I had placed on them five years before when they were young in the same nest at Orient, 11 miles from Cartwright. Two other adults had been trapped on their nests in 1938 and 1939. As far as I know these are the first adult fish hawks to be trapped on their nests. I have hopes of trapping the adults more extensively after the war is over in an attempt to learn more of their home life.

Three New Warbler Records in Chemung County

OLIVE ROGERS YORK
Elmira

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Sharp eyes and keen ears result in discovering new bird residents in a hitherto unreported locality for these species

IF, THREE years ago I had expressed the opinion that either parula, golden-winged or worm-eating warblers were breeding in Chemung county, certain of my ornithologist friends would have remarked with skeptically raised eyebrows, "Really? Are you sure? There are no records for them in this area." Well, I am sure now; and three new nesting records have been made for our vicinity.

A year ago we moved outside the city to a steep hillside where, below us, stretched several acres of hawthorne and wild crabapple; and beyond that, a steep wooded hillside. Last May migrating golden-winged warblers appeared in some numbers; and after this wave had passed on, two singing males kept up their *bee, buz, buz, buz* songs almost continuously well into June. Despite persistent search we never did locate their nests; but late in June we had proof that at least one had successfuly mated and nested when the parents were seen feeding a still tailless fledgling in the hawthorne thickets barely a hundred yards from our house.

During the period that we were searching for the nests of the golden-winged, I had several times heard what sounded like a chipping sparrow singing in the woods on the hillside. I recalled the saying — was it Griscom's? — that when a chipping sparrow's song was heard in the woods it was likely to be a worm-eating warbler's. Our friends, the Axtells of Cornell University, were with us at the time (Mr Axtell is instructor in the Zoology Department) and, somewhat dubiously, they listened to my none-too-confident identification, but decided it was worth following up. They entered the woodlot, and almost immediately came upon the worm-eating warbler pair carrying food to their young in a nest on the ground. They returned for me and took me to the nest; but to our consternation it was empty. Mr Axtell then "squeaked" (kissed the back of his hand) loudly to attract the parents, and two surprising things happened: A weasel came running up to us, showing almost conclusively what had happened to the nestlings; and

Photograph by A. A. Allen
Male Parula Warbler at Nest Near Elmira, June 1942

the parent warblers appeared with food in their bills, showing that they did not know that their babies had gone. The weasel disappeared, the warblers flew down to the nest, looked at it, flew up on a branch for a moment, then flew off without giving a single chirp. We never saw them again. We were surprised that they showed no excitement. They just seemed puzzled and resigned to the situation.

The story of the nesting parulas is longer; but also it is more satisfying. For several years the parulas had been seen here on migration. In 1942 when a pair stayed around until June we suspected that they must be nesting, improbable as it seemed in view of the complete absence of *usnea* moss or other nesting material known to have ever been used by parulas. We had no idea where to look for a nest, but I resolved to make a systematic and determined search. I walked about three miles up the Chemung river from the city limits until I found the male parula singing his scalelike song and flying around in a dense thicket of trees, shrubs and vines. Thinking his nest must be in the vines I watched him flit about and carry food for a couple of hours. Finally convinced that he was bearing food *from* the thicket, I changed my position, and then saw him fly to a clump of drift grass attached to a branch of a maple overhanging the river. To my joy and amazement I saw him enter the bunch of grass. Working nearer I was able to distinguish a tiny nest inside the clump of grass; and there the female was brooding. The nest (as later shown by close examination) consisted of slender rootlets, weed fibers and the like, flimsily attached to the cone of dependent grass and weeds. The enigma of what the parula uses here in place of hanging moss was solved, and a new nesting record was obtained for Chemung county. Dr A. A. Allen of Cornell University drove over two days later and spent some hours photographing the nest and its artificers. Beginning cautiously, so as not to alarm the birds, he soon learned that there was little likelihood of that with this particular pair. In fact, after the camera had been brought by stages to within about four feet of the nest the parents continued coming and going as before. The climax was reached when the male, emerging from the nest on one trip, perched nonchalantly on a twig a few inches from the nest, but with his back to the camera. Doctor Allen, hoping for a frontal view, got no reaction until he had actually waved his hat at the bird. Even then the parula merely flicked his wings and alighted on an adjoining twig barely ten inches away.

After this, daily visits were made for a period of about three weeks. It was found that when the young left the nest the parent birds immediately became shy and finally took their little family away so far that we lost track of them.

While observing the above pair of parulas we found a second male parula singing about a quarter of a mile down the river. A systematic search by Mr York and myself on two different days failed, however, to disclose either nest or female there. (By synchronizing our watches to the second and taking up positions at extreme limits of the singing area, we satisfied ourselves that this was indeed a second male.) The latest we heard him sing was the last week in June. We concluded he was an unmated male.

This past season, due partly to increased gasoline restrictions and partly to the fact that we now live five miles farther from the above parula habitat than in 1942, I visited that spot only once, and then only to ascertain whether the birds had returned and nested. They had. On another tree, but in a similar tuft of drift grass, less than a hundred feet from where they had nested in 1942, we found them firmly ensconced. I was sorry that a combination of obstacles conspired to prevent further study, but am looking forward to next May and June for a better report.

The Passenger Pigeon

R. E. BOWERS

Cortland State Teachers College

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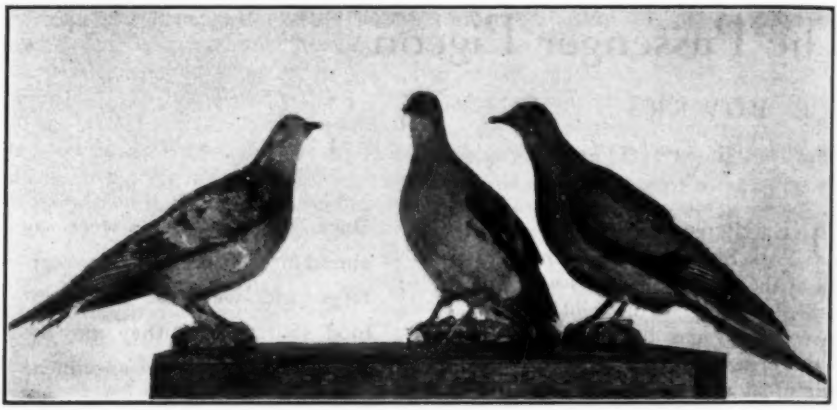
Once wild pigeons were as abundant as present-day starlings and were an important food source; now they may be seen only as museum specimens

ONE OF the early wonders of New York State and of the whole eastern half of the United States as well was the great abundance of the wild perching or passenger pigeons that were to be seen in the area, especially in the vicinity of their great nesting sites. At present the only comparable phenomenon is the vast number of starlings that may assemble for the night's roosting in some selected woodland, where they may present problems of elimination to the local authorities. Just as we of the present day can hardly imagine that starlings will ever become extinct, so our predecessors accepted the wild pigeon as a permanent factor in the life of the country.

A detailed yet not tiring summary of the history of the wild pigeon such as can be found in Forbush's Birds of Massachusetts brings home the need for conservation of our seemingly most abundant resources, if the resource under consideration has any element of value. The billions of passenger pigeons that occupied our country at one time served as a source of food supply not at all negligible. Naturally, when vast numbers of seed-eating birds settled on a newly planted grain field it was to be expected that serious damage would result. Apparently this was the only charge of undesirability lodged against them at any time. One observer with a flair for mathematics calculated that, on a very conservative basis, the amount of nuts and seeds necessary for the daily feeding of one flock seen by him was well over seventeen million bushels.

Years have passed since the last reliable field report of wild pigeons, so that hope is gradually fading that there still exist any living descendants of those once vast flocks. We must turn to museums where mounted specimens alone remind us of the time when conservation measures were given little or no attention. Comparatively few excellent specimens of this once extremely abundant bird are available. Cortland State Teachers College has been fortunate in recently acquiring a collection of birds and other animals that includes five good specimens of this now extinct form of life. The accompanying photograph shows a typical family group consisting of a male, a female and an immature form. Of the five specimens, three are males, one a female, one a young bird. With the exception of one male which has the date May 12, 1893, and the locality Red Cloud, Minn., the birds are not tagged.

My first and only observation of living wild passenger pigeons constituted also my first realization of the existence of such form of life. Born and reared in the northern reaches of the Appalachian ranges, I realized a long-cherished ambition on my twelfth birthday. Upon my appearance at the breakfast table I found a brand new rifle resting against the table beside my chair and several hundred cartridges beside it. This was strictly in accordance with the time-honored custom of the pioneer families of the region. Thereafter every available hour was spent in ranging the country far and wide in search of living targets. Several neigh-



Photograph by Walter A. Thurber

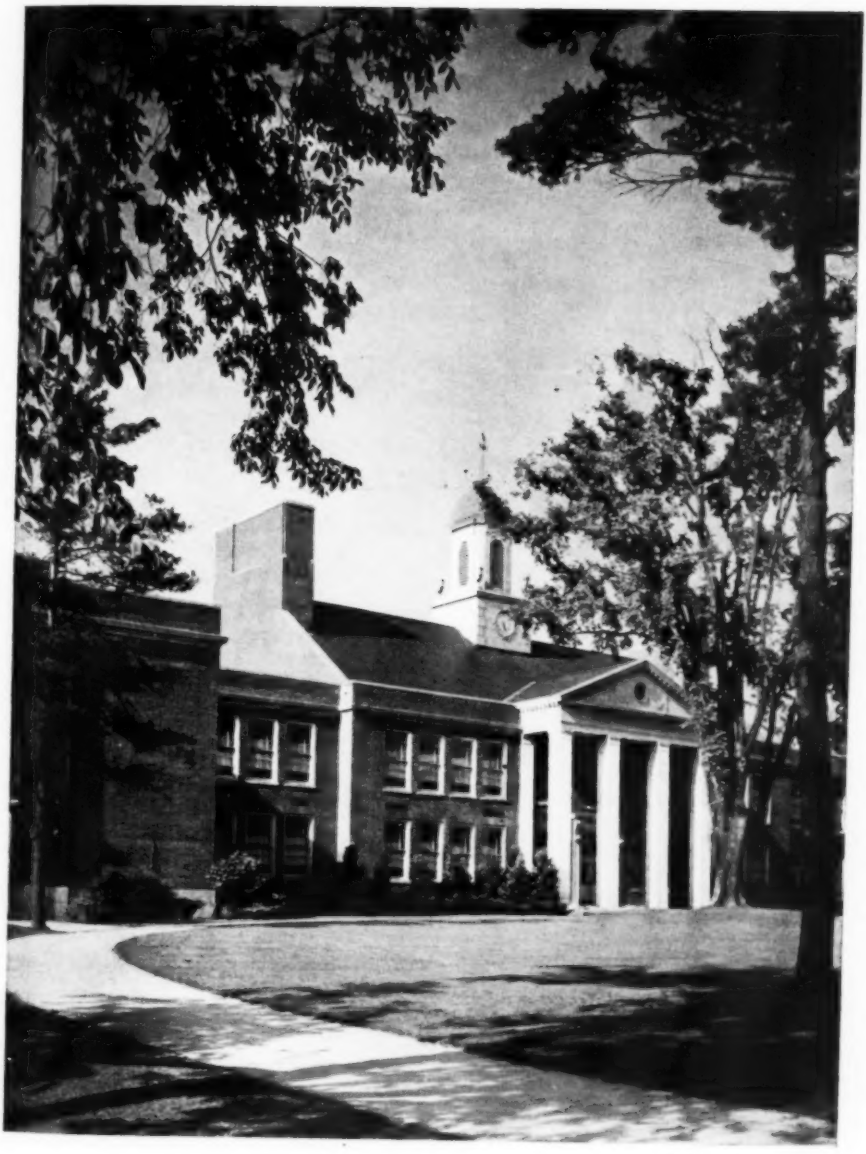
Mounted Passenger Pigeons in Cortland State Teachers College Museum: Immature (Left), Adult Male (Right), Adult Female (Center)

boring farmers welcomed my assistance in clearing their premises of the domestic pigeons that had become a positive nuisance. At that time all kinds of wild doves in Pennsylvania were listed as game birds with specific open seasons so that many a meal in our home centered around the success of my gunning expeditions. This familiarity with the various species of the dove order made possible the positive identification of the birds seen.

Home from college during the summer vacation in 1907, I had accompanied my father on the train to a small way station located approximately three and a half miles west of the village of Martinsburg in Blair county, Pennsylvania. While he was transacting business with some of the farmers in the vicinity, I wandered through the fields and bottom lands of the surrounding region. Returning to the station, I was surprised to see five exceptionally large dovelike birds in whistling flight pass over my head and take perch on the top branches of a large dead maple tree not more than 50 yards away. One was a male bird and the four others were either females or immature birds, as I learned later.

When I described to my father the unusual experience of having seen five very large doves, really pigeons to me, perched on a tree he asked for further and detailed description. He was convinced that the birds seen were none other than the wild pigeons of which he himself had not seen a single specimen "for 20 years or more," although when he was a youth, about 1860, it was his duty to supply periodically a pigeon meal for the family of ten plus the hired help. This was accomplished by sitting on the tail-end of an empty haywagon as it made its way to a distant field on the farm and shooting the birds that were perching or feeding on the small trees and shrubs that bordered the fields. An idea of the abundance of the birds at that time can be gained when it is remembered that he used a single-barreled muzzle-loading shotgun for this purpose.

Foxes, weasels, wolves, bears, hawks and Indians were enemies of the pigeons and had fed upon them extensively from time immemorial. Predators and weather apparently had not diminished the abundance of them. It appears that civilized man with his increasing ability to devise new means for the mass slaughter of all living forms, including himself, is alone responsible for the extinction of this once important native form of life.



Photograph by John Vrooman

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